

AMERICAN GAS ASSOCIATION MONTHLY



Vol. II

No. 2

February, 1920

Membership Number

Particular attention is called to the article in this issue outlining the Association's Membership Campaign. The interest and active support of every company and individual member is solicited.

ENTERED AS MATTER OF SECOND CLASS AT THE POST OFFICE, EASTON, PA.

Acceptance for Mailing at Special Rate of Postage Provided for in Section 1103, Act of October 3, 1917, Authorized July 16, 1918

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FOR STATEMENTS AND OPINIONS CONTAINED IN PAPERS AND DISCUSSIONS
APPEARING HEREIN, THE ASSOCIATION DOES NOT HOLD ITSELF RESPONSIBLE

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OFFICE OF PUBLICATION, EASTON, PA.
SUBSCRIPTION RATE \$3.00 PER YEAR

Entered as Matter of Second Class at the Post Office, Easton, Pa.
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AMERICAN GAS ASSOCIATION MONTHLY

ADDRESS ALL COMMUNICATIONS TO THE
AMERICAN GAS ASSOCIATION, Inc.
130 E. 15th St., NEW YORK, N. Y.

Editor, Louis Stotz

Associate Editor, . . . T. Marion Will

Vol. II FEBRUARY, 1920 No. 2

WITH THE EDITOR.

The Menace of Cheap Tubing

Every year with the recurrence of cold weather the menace of cheap gas tubings is emphasized. The reports of accidents which appear in the newspapers often fail to state the facts. It is too often the case that the headline, and frequently the news matter, says little of the real cause, which, not seldom, is the use of inferior grades of tubing for the supply of heating and other classes of portable appliances.

The sale of such tubing is beyond the control of gas companies, yet its use reflects upon their product and leads to an exaggerated prejudice concerning the hazards of gas. There may be purchased across the counters of many small dealers, cheap brands of tubing, the manufacture and sale of which should be prohibited. They are sold at a price which makes good material and workmanship impossible, and the result is an article which is unfit for use. Purchasers are misled into buying such trash in the mistaken belief that, because cheap, it is economical, but neither the injury nor the responsibility accrues to the seller. It falls first upon the mistaken buyer who believes he is getting something cheap, and next, and of course unjustly, upon the gas companies through the prejudice created in the public mind as to the dangers attending the use of gas. The real offender suffers little if at all.

Thus we have a condition where gas companies, doing all that lies within

their power to improve the quality of their service, to provide for their customers the most economical appliances for the use of gas, and to insure to the extent of their ability its safe and satisfactory use, are subjected, nevertheless, to the unfortunate results of the unrestricted sale by irresponsible dealers, of shoddy, unfit tubing.

Gas companies are doing much to compel the correction of this condition and to encourage the regulation by proper authority of the manufacture and sale of gas tubings which do not meet the essential requirement demanded by gas companies in the supply of their commodity to the public, that is, *safety*.

It is an effort which should not be relinquished until the cheap, harmful tubing has been driven from the market.

Misuse of High Volatile Coals

The following resolution has been presented to the U. S. Railway Administration. Members are requested to notify Association Headquarters of any specific cases which may come under their direct observation, which will enable the presentation of facts to the Railway Administration in support of its effort to discourage the uneconomical use of gas coals.

(Extract from Minutes of Executive Board Meeting, Dec. 18, 1919.)

WHEREAS: The use of high volatile coals for other than the manufacture of artificial gas results in economic loss through the non-production of useful by-products, and

WHEREAS: High volatile bituminous coals, when used for gas making purposes, yield, in addition to other by-products, approximately 60% of their weight in the form of high grade coke suitable for general fuel use, and

WHEREAS: The need of economy in the use of fuels, and more particularly in the use of bituminous coal, is of such great importance from a national standpoint.

Resolved: That this Board urges upon the United States Railroad Administration the necessity and the wisdom of taking all possible steps to prevent the use of high volatile gas coals for locomotive boiler fuel or other purposes where they are not capable of the most economical utilization, to the end that they may be restricted for use in the production of gas and thereby be made to serve the best interests of the public.

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National Committee Takes Action on Proposed Increase in Coal Prices

UNDER date of January 13, 1920, the following letter was presented to Mr. H. M. Robinson, Chairman, National Coal Commission, Washington, D. C., and Hon. A. Mitchell Palmer, Attorney General, Washington, D. C.

SIR:

Our Committee, which represents the public utility industries in affairs of mutual interest between themselves and the Federal Government, has had its attention called by many public utility companies throughout the country to the action of the bituminous coal operators in increasing coal prices as a result of the recent fourteen per cent. advance in miners' wages.

Speaking for the public utilities, it was understood by them, from the statements made by Dr. H. A. Garfield while acting as Federal Fuel Administrator, that the basis of the settlement of the coal strike as proposed by him would, among other things, have provided that

FIRST.—He would not sanction or permit any additional costs for coal to be placed on the public;

SECOND.—That from investigations conducted by the U. S. Fuel Administration he considered a fourteen per cent. increase in miners' wages to be quite sufficient to bring their earnings up amply to meet the increased costs of living;

THIRD.—That the investigations also disclosed that this fourteen per cent. increase could equitably be absorbed by the operators and producers, thereby holding the price of coal to the consumers where it had been without any increase in price.

While it is stated that the miners' representatives demurred at this arrangement, the operators expressed their satisfaction and generously offered to absorb the proposed fourteen per cent. increase in miners' wages, thus avoiding an increase in the price of coal to the consumer. It has been stated in the public press that this was also the basis of the settlement definitely arranged at a later

date between the United Mines Workers and the Attorney General of the United States, and which brought about the settlement of the strike.

It was understood that the final arrangement included other considerations such as reference to an investigatory commission to which might also be assigned powers to fix prices, rate of wages, conditions of service, etc., etc.

It has now been brought to our attention that the producers are notifying those with whom they have contracts, made previous to the settlement of the strike, that where such contracts provide for automatic increase in price if miners' wages are raised, they are entitled to increase the price of coal under such contracts in accordance with the terms thereof. In this way they would be passing along to the consumer the fourteen per cent. advance in miners' wages already accorded to them, notwithstanding the statement of the Fuel Administrator that the operators were already obtaining a price which would allow them to absorb this additional expense.

It was generally understood through the public press that this the operators specifically agreed to do, and we know of no mention having been made of exceptions to be applied to contract coal nor of any reference by the operators that coal supplied under such contracts would be exempt from the limitations on coal prices.

The public utilities of the country annually consume approximately 50,000,000 tons of coal, and their serious finan-

cial difficulties at the present time, particularly in the case of the street railway companies, are quite generally understood and appreciated. They are unable to pass along increased costs of operation owing to the fact that their charges for service are fixed by statutory enactment, franchise provisions or by public service commissions and other regulatory bodies.

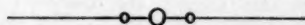
If the prices of coal under contracts made previous to the settlement are to be subject to increase because of the fourteen per cent. increase in miners' wages, a very large part of the increase in miners' wages will thereby be passed along to the public, contrary to the general understanding which prevailed at the time that the settlement was made. Had the utilities been advised that such a serious additional burden was to be placed upon them, they would certainly have registered a formal protest at that time to both the Washington authorities and the local commissions under whose jurisdiction they are conducted.

We shall be glad to receive from you a definite statement which can be forwarded to the utility companies which we represent, as to the policy which the Washington authorities are proposing to pursue, pending the final report of the National Coal Commission appointed by the President, in the matter of prices for coal under contracts antedating the strike settlement.

Very truly yours,

(Signed) G. W. ELLIOTT,

Secretary.



Amerigas, New York

The American Gas Association now has a registered code address for cable messages. It is Amerigas, New York.

Association Membership

WE are actively in the field with an effort to bring the membership of the Association, both company and individual, up to the full number we have set as our goal for the year 1920.

The 1920 Start

1775 Individual Members
173 Manufacturer Company Members
325 Gas Company Members

The 1920 Finish Should Be

5000 Individual Members
300 Manufacturer Company Members
Every Gas Company in the United States

In answer to your question, how are we going to do this, we say—first, by having the enthusiastic support of every member to supplement the efforts of the Association Headquarters' staff and the many friends of the Association who have pledged their active cooperation.

A booklet has been prepared, which tells the story of what the Association is and what it does. This has been sent to the managing executive of every non-member gas company with the following letter:

TO THE NON-MEMBER COMPANIES OF THE A. G. A.:

Mr. Henry L. Doherty, one of the most successful and prominent figures in the public utility field, at a recent meeting of the Executive Board of the Association, made this statement:

"It seems to me that any gas company, large or small, which does not recognize the wisdom and the business advantages, from a dollars and cents standpoint, of holding membership in the American Gas Association is not fully alive to the business conditions which confronts us.

"Mine was a 'show me' attitude when the American Gas Association was formed. I have been shown and in consequence I am an enthusiastic supporter of the A. G. A. I am glad to give my personal time to serving on its Executive Board and in many other ways in which I can assist in its work. My companies and a large number of their employees are in its membership, because we believe it deserves our wholehearted support."

There are 325 gas companies included in our membership at this time. These companies did not join from purely sentimental reasons but because of a realization that as a business proposition, on a dollars and cents basis, it pays.

The enclosed booklet will indicate the scope of the Association's usefulness to your company.

Will you join with us in making the A. G. A. 100 per cent. representative of the gas industry?

Very truly yours,
OSCAR H. FOGG,
Secretary-Manager.

A. G. A. SERVICE

IN organizing the American Gas Association its founders followed the lead of America's successful business enterprises, which have recognized the value of central, efficient and well organized national associations for the development and promotion of their interests.

Three hundred and twenty-five gas companies, 173 manufacturers, and 1,775 individuals, who compose the present membership of the A. G. A., are participating in the upbuilding of a national association which has demonstrated its usefulness to them and to the industry.

Mr. Samuel Insull, the managing director of many important public utility interests, says ---

"I think we are at last beginning to acquire what has long been hoped for in the way of a national association representing the gas industry of this country.

"The American Gas Association is proceeding sanely, intelligently and energetically in taking hold of the big problems which confront the gas industry, and the work of its various sections is being handled in a gratifying way. It is producing tangible results. I recall one activity of the Association which alone has been worth more to the Peoples Gas Light & Coke Company than the total cost of the company's membership. The Association should have the unanimous support of the gas industry of the United States."



Write to Association Headquarters for further details

130 East 15th Street, New York, N. Y.

A membership chairman in each state will, by correspondence, personal interview and otherwise, further supplement the efforts from headquarters to interest the companies in his particular state.

The manufacturer companies' field representatives will also carry the invitation to the companies in their territory. These men have many warm personal friends in the gas business and their service will be a help in securing the membership of many companies and individuals.

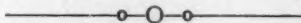
In addition to all this, the Association will carry a series of five full page advertisements in gas trade journals—*Gas Age*, *Gas Record*, *Gas Industry*, *American Gas Engineering Journal* and the *Canadian Gas Journal*. Each of these papers will also in their reading columns carry the message to those not in the Association.

The Association's field representative, Mr. Percy H. Hall, will call upon as many member and non-member companies as possible, for the purpose of addressing employees meetings, explaining fully the work of the Association and establishing a closer bond of unity between the Association and its members.

Now a word as to how we are going to reach the individual and interest him in the taking of active membership,—

The delegate of each company member will be addressed and asked to encourage the employees of his company to take membership. So that these men may know something of the conditions under which membership may be had, a chart (poster size, see illustration) has been prepared in two colors. Two copies will be sent to each member company with the request that the posters be hung in their office and shop. The names of those already holding membership have been inserted on the chart. Copies of the booklet before referred to will be sent to the company delegate for distribution to his employees and will also be furnished on request to the Association Headquarters.

Just think what it will mean when the Association's membership shall include every gas company, manufacturer of gas appliances, apparatus or gas supplies, and an individual membership of 5,000, all working together to solve the industry's common problems, all collectively represented by a national Association working to make the gas industry a bigger and more influential factor in the utility field. When that time comes, and it will not be long if we all pull together, the best interests of our members will be served in a way that will show truly remarkable progress.



THE ASSOCIATION IS IN THE FIELD TO ACCOMPLISH BIG THINGS
LET'S GO

[illegible][illegible]



—Theodore Roosevelt

—Theodore Roosevelt

The A. G. A. is working to make every position in the gas industry a better position and every individual in its membership the best man for his place.

try a better position

As the gas industry grows you will grow—our 1800 individual members are contributing to the prosperity of the gas business and gaining for themselves a place among the progressive men in the industry.

100 100 CIRCLED ZERO

ALL FOUR INSTALLED IN ONE

THE END

Your annual dues will be
\$5.00 for 1 Section
\$7.00 for 2 Sections
\$9.00 for 3 Sections
\$1.00 for each
Additional Section

The next step is to fill out the form. The American Society of Mechanical Engineers (ASME) has a form for this purpose. It is a 10-page form that you can find on their website. The form is titled "ASME Form 10-1" and it is used for the purpose of "ASME Form 10-1". The form is divided into two main sections: "Section 1" and "Section 2". Section 1 is for the purpose of "ASME Form 10-1" and Section 2 is for the purpose of "ASME Form 10-1". The form is divided into two main sections: "Section 1" and "Section 2". Section 1 is for the purpose of "ASME Form 10-1" and Section 2 is for the purpose of "ASME Form 10-1".

Accounting
Publicity and
Advertising
Commercial
Manufacturers
Technical

Each one an opportunity
for you to develop your
special interests and
knowledge.

AMERICAN GAS ASSOCIATION, INC.

130 E. FIFTEENTH ST., NEW YORK

State Membership Chairmen

Alabama—S. B. Ireland, Montgomery Light & Water Power Co., Montgomery, Ala.
Arizona—Frank E. Russell, Tuscon Gas, Electric Lt. & Pr. Co., Tuscon, Ariz.
Arkansas—W. F. Booth, Little Rock Gas & Fuel Co., Little Rock, Ark.
California—A. B. Macbeth, Southern California Gas Company, Los Angeles, Cal.
Colorado—C. N. Stannard, Denver Gas & Electric Light Company, Denver, Colo.
Connecticut—J. A. Norcross, New Haven Gas Light Company, New Haven, Conn.
Delaware—H. S. Schutt, Sand Title Bldg., Philadelphia, Pa.
Florida—Harry B. Hoyt, Jacksonville Gas Co., Jacksonville, Fla.
Georgia—R. C. Congdon, Atlanta Gas Light Company, Atlanta, Ga.
Illinois—H. H. Clark, Public Service Co. of Northern Ill., Chicago, Ill.
Indiana—S. E. Mulholland, No. Indiana Gas & Electric Co., Fort Wayne, Ind.
Iowa—H. R. Sterrett, Des Moines Gas Company, Des Moines, Iowa, (412 West 17th St.).
Kansas—W. H. McKenzie, Wyandotte County Gas Company, Kansas City, Kansas.
Kentucky—Donald McDonald, Louisville Gas & Electric Co., Louisville, Ky.
Louisiana—I. M. Stover, Baton Rouge Electric Co., Baton Rouge, La.
Maine—Burton Smart, Portland Gas Light Company, Portland, Me., (P. O. Box 668).
Michigan—G. R. Chamberlain, Grand Rapids Gas Light Company, Grand Rapids, Mich.
Massachusetts—C. E. Paige, Worcester Gas Light Co., Worcester, Mass., (240 Main St.).
Michigan—G. R. Chamberlain, Grand Rapids Gas Light Company, Grand Rapids, Mich.
Minnesota—A. H. Rand, Minneapolis Gas Light Company, Minneapolis, Minn.
Mississippi—L. C. Heavner, The United Gas Improvement Co., Vicksburg, Miss.
Missouri—J. J. Burns, Laclede Gas Light Company, St. Louis, Mo., (1017 Olive St.).
Montana—R. C. Cardell, Billings Gas Co., Billings, Montana.
Nebraska—W. H. Taylor, Omaha Gas Company, Omaha, Nebr., (1509 Howard St.).
Nevada—Geo. A. Campbell, Reno Power, Light & Water Co., Reno, Nev.
New Hampshire—W. F. Norton, Manchester Traction, Light & Power Co., Nashua, N. H.
New Jersey—R. R. Young, Public Service Gas Co., Newark, N. J., (80 Park Place).
New York—C. H. B. Chapin, Empire State Gas & Electric Assn., New York, N. Y.
New Mexico—Arthur Prager, Albuquerque Gas & Elec. Co., Albuquerque, N. Mexico.
North Carolina—Noble L. Clay, Winston-Salem Gas Co., Winston-Salem, N. C.
North Dakota—
Ohio—
Oregon—Hilmer Papst, Portland Gas & Coke Co., Portland, Oregon.
Pennsylvania—W. R. Rhoades, Northern Central Gas Co., Williamsport, Pa.
Rhode Island—Capt. McGregor, Pawtucket Gas Company, Pawtucket, R. I.
South Carolina—C. M. Benedict, Charleston Cons. Ry. & Ltg. Co., Charleston, S. C.
South Dakota—A. S. Graham, Sioux Falls Gas Company, Sioux Falls, S. D.
Tennessee—S. E. DeFrese, Chattanooga Gas Company, Chattanooga, Tenn.
Texas—K. L. Simons, El Paso Gas Co., El Paso, Texas.
Utah—Geo. L. Horning, Utah Gas & Coke Co., Salt Lake City, Utah.
Vermont—H. E. Olds, Twin State Gas & Electric Co., Boston, Mass.
Virginia—B. B. Ferguson, Portsmouth Gas Company, Portsmouth, Va.
Washington—Luther Gaston, Spokane Gas & Fuel Co., Spokane, Wash.
West Virginia—Leon H. Ware, Martinsburg Gas Company, Martinsburg, W. Va.
Wisconsin—P. D. Kline, Wisconsin-Minnesota Lt. & Pr. Co., Eau Claire, Wis.
Wyoming—

GENERAL COMMITTEES

CHAIRMEN OF COMMITTEES ORGANIZED TO DATE

National Bureau of Standards (Advisory Committee)—O. H. FOGG, New York, N. Y.	Gas & Electric Service (National)—W. H. GARTLEY, Philadelphia, Pa.
Beal Medal —GEO. B. CORTELYOU, New York, N. Y.	Gas Securities —RANDAL MORGAN, Philadelphia, Pa.
Accident Prevention —JAMES B. DOUGLAS, Philadelphia, Pa.	Funds for Gas & Electric Service —H. L. DOHERTY, New York, N. Y.
Amendments to Constitution —WM. J. CLARK, Mt. Vernon, N. Y.	National Fire Protection Assn., Membership in —W. R. ADDICKS, New York, N. Y.
Chamber of Commerce, Membership in —CAPT. WM. E. MCKAY, Boston, Mass.	Relations with Other Assns., etc. (Formation of Geographic and Company Sections)—L. R. DUTTON, Jenkintown, Pa.
Calorific Standards —J. B. KLUMPP, Philadelphia, Pa.	Standard Gas Appliance Specifications —W. T. RASCH, New York, N. Y.
Central Development and Testing Laboratory —W. H. GARTLEY, Philadelphia, Pa.	Standard Pipe Threads (International)—W. CULLEN MORRIS, New York, N. Y.
Educational —WALTON CLARK, Philadelphia, Pa.	
Finance —E. H. ROSENQUEST, New York, N. Y.	

Committee on Gas Securities

Announcement was made last month that the American Gas Association would appoint a special committee to work in conjunction with the Investment Bankers' Association sub-committee on gas securities.

The A. G. A. Committee as appointed is as follows:

RANDAL MORGAN, Chairman, Vice-President, The United Gas Improvement Co., Philadelphia, Pa.
 H. C. ABELL, Engineer, American Light & Traction Co., New York, N. Y.
 S. E. WOLFF, Engineer, Hodenpyl, Hardy & Co., New York, N. Y.
 A. B. TENNEY, President, Malden & Melrose Gas Light Co., Malden, Mass.
 BENJAMIN W. FREEMAN, Head of Bond Dept., H. L. Doherty & Co., New York, N. Y.
 SAMUEL T. BODINE, President, The United Gas Improvement Co., Philadelphia, Pa., to serve as substitute for Mr. Morgan.

FOURTH EDITION OF GOVERNMENT CIRCULAR 32

Gratifying progress was made in the revision of the fourth edition of Bureau of Standards Circular No. 32, "Standards for Gas Service", during the meeting of the Bureau's committee of advisory gas engineers, held in Washington, on January 13 and 14.

The meeting was presided over by Dr. E. B. Rosa, and attended by R. B. Brown, J. B. Klumpp, D. D. Barnum, R. G. Griswold, A. E. Forstall and Oscar H. Fogg, representing the American Gas Association, W. J. Huddle of Chicago, J. C. Dickerman, Chief Engineer of the

Virginia Commission, Dr. F. H. Snow, Chief Engineer of the Pennsylvania Commission, Mr. Hayden of the Wisconsin Commission, B. C. Oliphant, President of the Natural Gas Association of America, and Samuel S. Wyer, Consulting Engineer. Messrs. McBride, Phillips and Berry completed the Bureau's representation.

The third edition of Circular No. 32 was issued in March 1915. Developments since that time have necessitated many changes and revisions in the document in order to bring it up to date.

Report of the President of the U. S. National Committee of International Commission on Illumination for the Year 1918-1919

[The American Gas Association is represented on the U. S. National Committee of International Commission on Illumination by Messrs. C. O. Bond and W. H. Gartley of Philadelphia, and Mr. W. C. Morris of New York City.]

IN accordance with the statutes of the Committee, I beg to submit the following report for the fiscal year 1918-1919.

At the last annual meeting of the United States National Committee, the armistice had just been signed and there had, at that time, been no opportunity for international action looking to the re-establishment of the International Commission on Illumination.

In February of this year a letter was received from Mr. C. C. Paterson, Honorary Secretary of the Commission, addressed to the members of the Executive Committee of the Commission, suggesting a plan of procedure for the reorganization of the Commission and requesting the views of the members of the Executive Committee.

In order that the opinions expressed by the United States representatives on the Executive Committee might be consistent, the one with the other, and expressive of the combined judgment of the members of the United States National Committee, a special meeting of the Committee was called in April and the communication from Mr. Paterson was laid before it. It is unnecessary to reproduce here this communication which is on file in the office of the Secretary of the Committee, but it may be of some value to state briefly the proposals for reorganization which the President and Honorary

Secretary of the International Commission submitted for consideration. I quote these proposals from Mr. Paterson's letter of February 21, 1919.

- (1) That a new International Commission on Illumination be established.
- (2) That the statutes of the old Commission be adopted for the new Commission, with such minor amendments as may be necessary to meet the new conditions.
- (3) That a National Committee from any of the countries at war with the Central Empires may have a share in the work of the Commission provided it conforms with the Statutes.
- (4) That neutral countries may also associate themselves in the same way with the work of the Commission and that in the first instance Holland and Switzerland be invited to take part in it.
- (5) That if either or both these neutral countries prefer to remain outside the Commission, the new Commission nevertheless be started as (1), (2) and (3) above. In the event of no neutral countries joining in the work, the membership of the Commission would be restricted to allied and associated countries, and such others as would be introduced by them into the Commission.
- (6) That the first meeting of the new International Commission be held in Paris at a date to be settled in due course when the situation has become more normal.

The Committee, after due deliberation, passed a resolution endorsing the proposals submitted by Mr. Paterson and suggesting that Mr. W. H. Gartley, one of the United States representatives on the Executive Committee of the International Commission, prepare a reply to

Mr. Paterson's letter, stating that all the United States members of the Executive Committee, supported by the combined judgment of the members of the United States Committee, endorsed the proposals that had been submitted.

Subsequently, Mr. Paterson, after having received replies from members of the Executive Committee resident in other countries, forwarded a second communication, outlining in more detail two possible methods of procedure, one proposed by M. P. Janet of France, and one suggested by Dr. Harold G. Colman of England.

The only point in question regarding the reorganization of the Commission concerned the admission of neutral countries. It was felt in France that the first meeting of the Commission for reorganization should have representatives only from the four allied countries, Great Britain, France, Italy and the United States, which already had National Committees, and that the question of the admission of neutrals should be considered at this reorganization meeting.

Dr. Colman, cognizant of this attitude of the French representatives, but desirous of conserving time and of making the first international meeting as full as one as possible, suggested that a reorganization of the Commission with the old officers and with the old statutes, except for such minor modifications as might be necessary, should be accomplished by letter ballot among the four allied countries. After this had been accomplished, he suggested that the question of admission of neutrals might then be submitted by letter ballot to the National Committees of the four allied countries, so that in case such a ballot led to admission of certain neutral countries, the first international conference would be as full as possible and could proceed at once to the discussion of technical matters.

Consistent with the views expressed in the earlier communication, Mr. Gartley replied in favor of the proposals of Dr. Colman, but as yet, no further word has been received from the Honorary Secretary.

It would seem, in view of these delays, that it is scarcely to be hoped that a plenary meeting of the Commission, under any plan of reorganization, can be planned before the summer of 1921, as I understand it to be the judgment of this Committee that no international conference should be called until a technical program is ready for consideration.

In my last report to this Committee I outlined the various activities which had been suggested several years ago as suitable ones for presentation to the International Commission at its first technical session. On the basis of this report several resolutions were passed making provision for the preparation of reports of these various technical matters. I shall consider them in the order in which the resolutions were made.

(1) Several years ago the Executive Sub-Committee of the U. S. National Committee outlined various investigations which were submitted to a number of Laboratories with a suggestion that it would be of value to secure further data on these subjects, which included the following:

1. Methods of heterochromatic photometry
2. Light filters
3. Co-operative standardization of filters
4. Objective photometry
5. Primary standards
 - (a) Existing standards
 - (b) Black body
 - (c) Metal filament standards
 - (d) Other proposals.

Not a little work has been done, and in most of these subjects sufficient data are now available to justify a report, which, after approval by this Committee, might be submitted to the International

Commission at its first technical session.

At the last annual meeting of the U. S. Committee, a resolution was passed instructing the President to appoint a Sub-Committee, with himself as Chairman, to collate the results of these investigations and to prepare reports to be submitted to the National Committee. The President appointed on this Sub-Committee, Messrs. Bond, Crittenden and Sharp, and at a meeting of this Sub-Committee, one or two of the subjects listed above were allotted to each member of the Committee. Up to the present time these reports have not been completed.

On one subject only did the Committee feel that still further investigations were necessary, namely:—Visibility of Radiation by the Direct Comparison Method.

The Sub-Committee on Research was of the opinion that it would be very valuable if the investigation of this subject could be undertaken promptly by the United States Bureau of Standards, and a request to that effect was made to the Director of the Bureau. Unfortunately the reply from the Bureau contained little or no hope that this investigation could be undertaken in the near future.

Subsequently, with the approval of the Sub-Committee, the Chairman submitted the problem to the Engineering Division of the Research Council, as a fundamental investigation underlying illuminating engineering. This matter is at present under process of negotiation with the Chairman of the Engineering Division, and it is too soon to forecast the outcome.

There would seem, however, to be good reason to believe that rather comprehensive reports with recommendations on these various fundamental questions might be available for presentation before the International Commission on Illumination at its first technical session, whenever the session might be held.

(2) Several years ago the suggestion was made that this country should recommend to the Honorary Secretary that all lighting codes in existence in the various countries adhering to the Commission should be collected to the end that there should be a more wide-spread, intelligent effort to encourage the framing of lighting codes everywhere. This activity, like others of our National Committee, was temporarily abandoned during the war, and at the annual meeting of the National Committee last year, it was thought advisable that a Sub-Committee of the U. S. National Committee should be appointed to bring together, in collaboration with the chairman of the Committee on Lighting Legislation of the Illuminating Engineering Society, all codes available in this country, and to transmit them to other National Committees, with the thought that they might be of value in connection with the reconstruction of the devastated portions of Belgium, France and Italy.

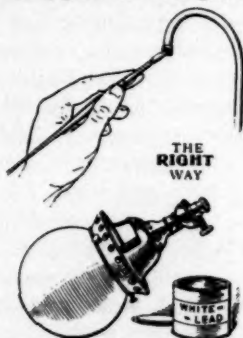
Pursuant to the resolution, a Sub-Committee was appointed consisting of Mr. Millar as chairman and with Mr. Cravath as the other member, and I take pleasure in reporting that this Sub-Committee promptly and most efficiently prepared a bound volume, entitled "Better Industrial Lighting in America," and containing an accurate statement of the aims and achievements in this country in the way of codes on industrial lighting, followed by an appendix containing a copy of the Illuminating Engineering Society's code and the adopted or proposed codes of a half dozen states, together with several other publications which it was thought would be of interest. A copy of this bound volume has, I understand, been submitted to the National Committee of each of the allied countries adhering to the Commission.

(3) A third resolution was passed to the effect that a Sub-Committee be appointed to collect information as to the sizes of lamp bulbs, and the designation of the same in this and other countries, with a view to securing international uniformity as to the method of designation. A Sub-Committee consisting of Dr. Kennelly, Chairman, and Drs. Bell and Mailloux was appointed, but as yet this committee has not submitted any report.

E. P. HYDE, *President.*

THE RIGHT AND WRONG WAY OF MAKING GAS-TIGHT JOINTS

Often we hear of gas lamps which are said to be so defective that they fail to ignite, or in other cases, pass too little gas to give the



No. 1

required illumination. On inspection of a number of such burners, it was found that they were in no way mechanically defective, but that the burner became clogged with white



No. 2

lead, cement, soap, or some other substance used in installing the burner to make a gas-tight joint.

Every gas fitter should know that white lead should be spread on the tip of the chandelier arm, as shown in the accompanying illustration, No. 1, and not in the burner or bunsen base, as shown in illustration No. 2. Tip of the chandelier arm *alone* should be covered with a little white lead. Cement makes a needlessly tight joint, and soap is only a makeshift. The second mistake is that in nine cases out of ten too much white lead is used. A very small quantity, just enough to cover the thread, is sufficient.—*Intercolonial Gas Journal of Canada.*

ILLINOIS GAS ASSOCIATION MEETS IN CHICAGO

Plans have been completed for the Sixteenth Annual Convention of the Illinois Gas Association, at Hotel Sherman, Chicago, on March 17 and 18, 1920.

The following papers will be presented:

- "Friendly Relations with the Public," B. J. Mullaney.
- "Central Market for By-Products Disposal," H. B. Coho.
- "Quantity Consumption and Its Effect on Customers' Rate," S. B. Cushing.
- "Utility Accounting in Illinois," W. J. Achelpohl.
- "Appraisals and Rate of Return for Utilities," W. J. Hagenah.
- "Illinois Coal for Coal Gas Production," S. E. Nims.
- "Recent Development in Industrial Uses for Gas," J. H. Gumz.
- "House Heating by Gas," P. M. Spies.
- "Appliance Sales," J. E. Davies.
- "Gas Purification," W. A. Dunkley.
- "Effect on Credit and Securities Due to Diversified Field of Gas and By-Products," Rufus C. Dawes.
- "Relative Efficiency of Gas and Electricity for Heating Purposes," A. Herz.
- "Location of Large Gas Generating Station in the Coal Mining District"—Discussion.
- "Problems Connected with Changing from One Kind of Gas to Another, and Their Solution," J. A. Siepker.

Mr. Charles A. Luther, 1600 Peoples' Gas Building, will receive orders for tickets to the annual banquet, at \$5.00 each, to be held at Hotel Sherman on March 17.

A gas appliance exhibit will be held on the mezzanine floor of the hotel.

Gas Companies and Daylight Saving

SINCE our Special Bulletin No. 5 was published in August containing correspondence between the President of the National Daylight Saving Association and the Secretary-Manager of the A. G. A., we have lost no opportunity to refute the charge that gas companies had opposed the Daylight Saving law and fostered a propaganda to secure the repeal of the original measure. Newspapers, speakers and advocates of daylight saving, not always well informed, have had the facts put squarely up to them. Some have been appreciative of the information provided and glad to have an authoritative statement of the position of the gas industry, and that there are those who have been able to consider this matter fairly and without prejudice is encouraging.

We were told that Senator W. M. Calder was an active supporter of The Daylight Saving Law and were led to believe that he shared the mistaken view; and so we stated the facts to him. His reply is brief, but to the point, and we print it with his permission. If other prominent advocates of Daylight Saving had been as fair minded as Senator Calder, and had first investigated the attitude of gas companies, they would not now be in the unenviable position of having clouded their cause by unfair attacks on the gas industry of the United States.

Excerpts from the Secretary Manager's correspondence and the reply made by the Senator have been sent from headquarters as a News Service release of our publicity Section. The Secretary-Manager's letter to Senator Calder was as follows:

"It is understood that you are one of the prominent advocates of Daylight Saving, and if that is correct we believe that you will welcome a communication which states the facts in regard to the position of the gas interests of the United States on the repeal of this law.

"The American Gas Association knows of no cases where Daylight Saving has been opposed by gas companies or by those interested in the gas business. This Association has never been asked by a single individual member or member company to oppose or discourage Daylight Saving in any way whatsoever, nor has it ever heard of a case of opposition on the part of any one of its 1700 individual members or of its 330 gas company members.

"The force and validity of these statements becomes apparent when you know that the American Gas Association is the national representative of 70 per cent. of the gas interests of the country, and the organization which would be most accurately informed as to the general attitude of the industry which it represents.

"Furthermore, these statements were first formulated following accusations which led to definite investigations.

"From time to time the gas industry of the United States has been accused,—either directly or under the general term 'The Lighting Interests'—of having actively opposed the Daylight Saving Law, and of having been active in the movement to cause the repeal of that measure, as well as with an attempt to spread propaganda among farmers and the agricultural interests in opposition to the Daylight Saving movement, but in each case without cause and with no foundation in fact, as I believe will be apparent from the enclosed correspondence (i. e., between A. G. A. and Pres. Marks of Daylight Saving Association).

"We confidently assert that the gas industry has not engaged in any propaganda among the agricultural or any other interests to cause the repeal of the Daylight Saving Law. The effect of the Daylight Saving Law upon gas companies has been so negligible

as to be unworthy of consideration, and in several large situations which the writer personally examined, the difference in sale of gas, due to Daylight Saving, was so small that it

"Furthermore, the point of view of the gas companies is exactly that of the electric man of Denver, who, in a letter to his Mayor on the subject of a local Daylight Saving Law, said, 'An electric light company may lose a little temporary revenue, but the prosperity of any utility corporation is dependent upon the prosperity and good will of the community it serves, and it will benefit in the long run.'

"We are sure that you will be glad to be assured that any opposition to this important measure which you advocate has not and does not come from the gas companies and as representative of the gas industry, this Asso-

ciation seeks only an impartial consideration of the facts and relief from the unjust charges which have been made on this subject."

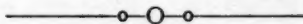
The Senator's reply to Mr. Fogg was as follows:

"My attention has been brought to your letter of December 27th, received in my absence during the recess of Congress.

"I have often heard it charged that the Gas and Electric Light Companies conducted a propaganda in opposition to the Daylight Saving Law, but while I have made careful inquiry, I have found no facts whatever to substantiate this charge."

Yours very truly,

(Signed) WILLIAM M. CALDER.



Secretary Lane Urges Conservation of Natural Gas

PROMPT steps to bring about the discontinuance of wasteful practices in the production, distribution and use of natural gas was the key note of the address made by Secretary Franklin K. Lane, of the Department of the Interior, in his address before the natural gas men, appliance manufacturers, public officials and others who attended the conference in the auditorium of the New Interior Building in Washington, on January 15.

Dr. Van H. Manning, Director of the Bureau of Mines and Dr. George Otis Smith, Director of the Geological Survey, presented statistics and much detailed information on the present state of the natural gas supply.

S. S. Wyer amplified the statement made in his recent paper, "Waste and Correct Use of Natural Gas in the Home" (Technical paper 257, Bureau of Mines) that domestic consumers waste

more than 80 per cent. of the gas received. It was stated that the efficiency of most cooking and heating appliances could be trebled. By making natural gas worth saving, the 2,400,000 domestic consumers in the United States could get the same cooking and heating service with one-third of the gas—that is, 1 foot of gas would do the work of 3—and greatly delay the day when the present supplies will be exhausted and consumers must go back to the more expensive manufactured gas.

The diminishing supply of natural gas demands prompt and concerted action by the producers, distributing companies and the consuming public, according to the government and Commission officials who addressed the meeting. A resolution was passed by the Conference, creating a National Natural Gas Conference Commission. It is understood that the personnel of this Commission will be announced within several days.

Chicago Gas Company Gives Rewards for Suggestions

CHARLES A. MUNROE

THE Peoples Gas Light & Coke Company of Chicago pays to employees \$1.00 for every acceptable suggestion tending to further the company's interests in respect to improvement of service, increased safety, reduction of expense, securing new business and the like.

Each winning suggestion also becomes eligible in competition for five "capital" prizes, which are awarded annually; best suggestion of the year, \$50.00; second best, \$40.00; third, \$30.00; fourth, \$20.00; and for the greatest number of suggestions accepted from any one employee during the year, \$10.00.

The try-out of this policy began in March, 1919, when the first edition of the *Employees Hand Book* was issued, and ended on November 1, 1919. The offer did not produce a sensational crop of revolutionizing suggestions or uncover genius hitherto unsuspected; it was not, and could hardly be, expected to do that. It did stimulate the mental activities of a considerable number of employees in relation to the company's business and their part in it.

More than 200 suggestions were made during the period of less than eight months, from March to November 1—not a disappointing number when one remembers that it was something entirely new and that it was advertised to the employees only by inclusion in the *Employees Hand Book*. The number of suggestions increased steadily toward the end of the period as the recipients of the dollar advertised the fact among their fellows. This, with the additional advertising given to the results and to the award of the "capital" prizes in the

official paper of the company employees' club, suggests that another year may produce a larger and perhaps better crop.

Of the suggestions made, 83 won a dollar each, 28 pertaining to business operations and 55 to "safety first" precautions. A number of these—ten on business and a larger number on safety—were not of a kind that could be adopted because they were already supposedly in effect but the makers were given their dollar each, either because they uncovered non-observance of company rules, or otherwise reflected the merit of alertness and intelligence.

The first prize of \$50.00 in the annual award went for the adaptation of a quick action valve stem wrench for use in manhole and street work that can be operated from the surface by one man—an important contribution to safety.

All three prizes for second, third and fourth-best suggestions were divided because there was no one of outstanding merit in either class.

Second prize: two safety suggestions, one regarding a walkway around gas holder cups and the other for placing a guard rail in the generator house where floor plates are sometimes raised.

Third prize: chopping out a curb fronting the garage, to prevent bumping machines and merchandise; substituting Ford runabout for motorcycles for cut-off and turn-on work in a sparsely settled suburban district, at considerable saving in expense.

Fourth prize: divided between two suggestions pertaining to facilitating routine office work.

Fifth prize of \$10.00 for the greatest number of suggestions from any one employee, went to a shop man who turned in twelve acceptable suggestions.

The rule covering the making of suggestions in the *Employees Hand Book* is as follows:

"MAKE YOUR SUGGESTION in writing (typing is preferred,) but do not sign it. Seal the envelope and write the name of the department, or departments, to which the suggestion applies in the upper left-hand corner of the envelope. Place that envelope in another envelope

and mark the outer one "Suggestion by _____," giving your name and department, and address it to the Secretary of the Company. Your unsigned suggestion will be given a number and recorded with your name, in the Secretary's office; without being opened, it will then go to the department affected by it, for judgment. Final action on it will be taken in the Secretary's office."

Competition is open to all employees, except heads of departments and sub-departments, or their assistants, *when suggesting improvements in their own particular work.*

Important Ruling Favors Gas Company

The following is printed in order to give our members a permanent record of the important decision rendered by the Appellate Division of the Supreme Court of New York on December 20, in overruling a decision by Justice John V. McAvoy against the Bronx Gas & Electric Company in the motion to dismiss the demurrer of Public Service Commissioner Nixon to the Company's suit for judgment.

The *New York Times* states the case as follows:

"The Company asserts that Chapter 125 of the Laws of 1906 is unconstitutional and void insofar as it prohibits the Gas Company from increasing its rates to \$1.50 per thousand cubic feet.

"It is a principle of common law, early declared and long recognized, that where any one devotes his property to a use in which the public has an interest, he must submit to public regulation.

"The right of regulation has always been vested in the Legislature, and not in the judicial branch of the government. It is insisted, however, that the owner of property is entitled to a reasonable compensation for its use, even though it be clothed with a public interest, and that what is reasonable is a judicial and not a legislative question.

"A corporation engaged in a public service, or a person devoting his property to such use, is bound to render a personably

adequate service for which he is entitled to exact a fair charge.

"The order will, therefore, be reserved with \$10 costs and disbursements, and the demurrer overruled with costs, with leave to the defendant to withdraw the demurrer and submit an amended answer within twenty days from service of the order with notice of its entry."

The *New York Times* also commented upon the case in a full column editorial in which such statements as the following are of special significance:

"The difficulty is that the law remains as it was passed and conditions have changed so as to make it hardly less than ruinous to those who were thought in 1906 to be earning undue profits."

"The distress of the railways, tractions, and gas companies will taint the entire industrial fabric unless it is checked."

"Commissions bound by statutes which lawmakers forget are as dangerous as explosives with a lighted fuse attached."

As of special interest to our members, it should be noted that in commenting on the increased costs of other articles of necessity as compared with gas, the *Times* quotes the figures supplied by the Association's graphic charts which appeared first in the A. G. A. MONTHLY of November-December. This is excellent evidence of the value of the work which our publicity department can accomplish.

N. F. P. A. Plans Local Fire Protection Cabinets

AS a member of the National Fire Protection Association, the A. G. A. has received a communication from Franklin H. Wentworth, Secretary, outlining a plan for the organization of the individual members of the N. F. P. A. in each town or city for active fire prevention work.

A number of the individual members and delegates of company members of the A. G. A. are also enrolled in the N. F. P. A. and we believe that every gas man is thoroughly alive to the great need for fire prevention activity throughout this country.

The plan which Mr. Wentworth desires to have placed before every one of these men contemplates the organization of all N. F. P. A. members in a given community as a permanent committee or cabinet surrounding the local fire chief. The initiative can be taken by any man who appreciates the significance of fire waste and is interested in reducing it, and the fire chief is the man to undertake the detail of getting the cabinet together and in working order. He will act as secretary to call monthly meetings and to outline plans or present topics for investigation and discussion. Mr. Wentworth's letter says:

"The value of such cooperation is obvious. The fact that these men are in different walks of life is a peculiar advantage, for nobody can then charge that any special interest is behind the local fire prevention undertakings. A cross section of the Association membership in any average city will give the leading architect, consulting engineer, insurance agent, builder, manufacturer, warehouseman, credit

man, department store manager, and so on. Here is a non-political, friendly, interested body of men, any or all of whom can be depended upon to help the fire commissioner or chief in the right way. Wonderful things can be accomplished by such a group. By persistent efforts it can influence every factor of civic life to advance the city in the direction of its endeavor. Cities are not made fire safe in a day. A long development beginning with proper building construction and following with proper safeguards is essential.

"In one Western city where this plan of organization is already under way, the local cabinet is to make a survey of the city with special reference to sweeping fires, picking out the buildings that might serve as fire stops and ascertaining if their window openings are protected by fire shutters or metal window frames and wired glass. If not, a committee of the cabinet is to call upon the owners with the fire chief and explain the advantage both to the tenants and the city of providing such protection. No good citizen could withstand such a request made in the interest of the common safety. This is just one example of what such a cabinet can do. The downtown, high value portions of all cities can gradually be made conflagration proof by such quietly effective work.

"The impoverishing effect of fire waste is national, but every fire is local,—it must start somewhere. Local organization is therefore necessary—collective action by men and women who have been awakened, and who are capable of enthusiasm and devotion in eliminating local fire hazards. We must organize these forces already at our command, and begin locally, in each city, to eliminate the fire hazards which in their aggregate are impoverishing the collective life and blackening our national fame."

Those who are willing to help in this plan in their own cities are asked to write at once to the National Fire Protection Association, 87 Milk St., Boston, Mass.

ACCOUNTING SECTION

A. P. POST, Chairman

H. W. HARTMAN, Acting Secretary

A. L. TOSSELL, Vice-Chairman

MANAGING COMMITTEE — 1920

At Large

ALDEN, CHARLES A., Boston, Mass.
BRUNDAGE, H. M., New York, N. Y.
BULFIN, J. F., St. Louis, Mo.
ERICKSON, HALFORD, Louisville, Ky.
PETTER, W. H., Newark, N. J.
POST, A. P., Philadelphia, Pa.
SCHMIDT, Wm., Jr., Baltimore, Md.
SCOBELL, E. C., Rochester, N. Y.
TOSSELL, A. L., Chicago, Ill.

Representing Affiliated Societies

ARMSTRONG, J. J., Toronto, Can. (Canada)
BARNES, A. M., Cambridge, Mass. (N. E. Gas Eng.)
CHAPIN, C. H. B., New York, N. Y. (Empire State
G. & E. Ass'n.)
EATON, H. M., Detroit, Mich. (Michigan)
HAASE, EDWARD, Milwaukee, Wisc. (Wisconsin)
HOUGHTON, W. E., Los Angeles, Cal. (Pacific Coast)
JAMES, F. M., Aurora, Ill. (Illinois)
MAYNARD, H. B., Waterloo, Iowa. (Iowa)
MCCABE, J. B., Dallas, Texas. (South Central)
PORTER, EDW., Philadelphia, Pa. (Pennsylvania)
POTTER, O. F., Newark, N. J. (New Jersey)
SHEARON, E. F., Hammond, Ind. (Indiana)
STOTHART, E. C., Charleston, S. C. (Southern)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Automobile Cost Accounting—S. J. PALMER, Chicago
Merchandise Accounting—W. A. SAUER, Chicago
Job Order Systems—W. G. STERRETT, Chester, Pa.
Vice-Chairman, F. M. JAMES, Aurora, Ill.
Office Labor Saving Devices—J. L. CONOVER, Newark,
N. J.

State Representatives—J. W. HEINS, Philadelphia
Trade Acceptances—(Joint Com. with Mfrs.) L. F.
MUSIL, New York, N. Y.
Uniform Classification of Accounts and Form of Annual
Report to Public Service Commissions—W. J.
MEYERS, New York, N. Y.
Uniform Accounting Nomenclature—W. H. PETTER,
Newark

Accounting Section Activities

Standard Classification of Accounts for Gas Corporations

IN December two copies of the Committee's proposed Standard Classification of Accounts for Gas Corporations were forwarded to each company member of the Association in accordance with the following resolution adopted at the 1919 Convention:

"RESOLVED, That the Committee on Standard Classification of Accounts, appointed by resolution of the Managing Committee of the Accounting Section, be and hereby is directed to distribute to all members of this Section at the earliest practicable date, for their criticisms and suggestions, the classification of accounts formulated by it, and that such members are requested to make careful study of the said classification and *within thirty days* after its receipt to submit in writing to

the said Committee their criticisms and suggestions regarding it, which criticisms and suggestions the said Committee shall carefully consider."

Since that time, criticisms and suggestions have been received from several companies, but the response on the whole has not been so general as the Committee had hoped.

The adoption of a uniform classification of accounts is a project in which each company in our organization should have a deep interest and the expression of the views of each company will aid in giving the classification the broad authority of the industry.

The Committee is already in receipt of requests for co-operation from companies in two states where the Public

Service Commissions are considering the adoption of classifications for gas company accounts. Wherever similar questions are under consideration, the companies should urge the commissions to give careful consideration to the Association's Standard Classification of Accounts now in tentative form but shortly to be promulgated definitely with such changes as may seem advisable as a result of the examination which it is now undergoing.

State Representatives and Contributions to MONTHLY

The following State Representatives have been appointed to the above Committee:

- J. W. HEINS, Chairman, The United Gas Improvement Co., 1401 Arch St., Philadelphia, Pa.
- H. M. EATON, 710 Union Trust Bldg., Detroit, Mich.
- EWALD HAASE, Milwaukee Gas Light Co., 182 Wisconsin St., Milwaukee, Wis.
- BURTON SMART, Portland Gas Light Co., Portland, Me.
- C. F. BRYANT, Westchester Lighting Co., Mt. Vernon, N. Y.
- C. S. MORSE, Portsmouth Gas Co., Portsmouth, Va.
- A. S. GRAHAM, Sioux Falls Gas Co., Sioux Falls, S. Dakota.
- W. J. ACHELPOHL, Illinois Traction System, Peoria, Ill.
- H. C. ESTBERG, Shawnee Gas & Electric Co., Shawnee, Okla.
- GEO. R. HORNING, Utah Gas & Coke Co., Salt Lake City, Utah.
- J. E. MCLEOD, Laclede Gas Light Co., St. Louis, Mo.
- P. L. KING, San Antonio Public Service Co., San Antonio, Texas.
- W. R. PUTNAM, Idaho Power Co., Boise, Idaho.
- HARRY T. HUGHES, Denver Gas & Electric Light Co., Denver, Colo.
- J. A. MCARTHUR, Hartford City Gas Light Co., Hartford, Conn.
- B. P. SHEARON, Northern Indiana Gas & Elec. Co., Hammond, Ind.
- HILMAR PAPST, Portland Gas & Coke Co., 5th & Adler Sts., Portland, Ore.

H. B. LOHMEYER, Burroughs Adding Machine Co., 217 B'way., New York City, (Traveling Representative).

T. O. GRISSELL, Elliott-Fisher Co., Harrisburgh, Pa., (Traveling Representative).

The objects of this Committee as explained in the *January Monthly* are to provide a service for member companies whereby accounting problems that arise in their transactions may be answered and also articles on gas company accounting procedure may be secured through the Committee's representatives in the various states.

We are again outlining the scope of this Committee as the assistance which can be rendered will depend largely on the extent to which member companies avail themselves of this service. Accounting problems are constantly arising and the Committee as organized can be of constructive assistance in their solution, especially to smaller organizations. Address your inquiries to Mr. J. W. Heins, % The U. G. I. Co., Philadelphia, Pa., or to the representative of the Committee in your State.

Merchandise Accounting

The following have been appointed as members of the above Committee:

- W. A. SAUER, Chairman, Peoples Gas Lt. & Coke Co., 122 So. Michigan Ave., Chicago, Ill.
- A. C. WINTERS, (Office Wm. A. Baehr) Peoples Gas Bldg., Chicago, Ill.
- H. C. MORLEY, Consumers Gas Co., Toronto, Canada.
- F. R. CUTCHEON, % Gas Co., Long Branch, N. J.
- T. W. GREGORY, East St. Louis Light & Power Co., East St. Louis, Ill.
- R. SHACKLETTE, Big Rapids Gas Co., Big Rapids, Mich.
- J. E. KANE, Cons. Gas, Electric Light & Power Co., Baltimore, Md.
- JOHN D. KILLOREN, Laclede Gas Light Co., St. Louis, Mo.
- J. L. CONOVER, Public Service Gas Co., Newark, N. J.

- H. E. GOHEEN, Northern Indiana Gas & Elec. Co., Lafayette, Indiana.
 A. T. PLEUNE, Cedar Rapids Gas Co., Cedar Rapids, Iowa.
 CLARKE HAMMOND, United Gas Improvement Co., Philadelphia, Pa.
 FRANK A. LEACH, JR., Pacific Gas & Electric Co., Oakland, Cal.

The Chairman reports that the above will practically complete the personnel of this Committee. Preliminary work on the Committee's report will be started by requesting each member to submit an outline of the procedure and methods followed by his company. From this information a report recommending a standard merchandise accounting practice for all companies will be submitted at the 1920 Convention for the approval of the Section.

Uniform Accounting Nomenclature

- W. H. PETTES, Chairman, Public Service Gas Co., 80 Park Pl., Newark, N. J.
 FRANCIS ENGEL, Elizabethtown Gas Lt. Co., 124 Broad St., Elizabeth, N. J.
 H. SCHATTSCHNEIDER, Milwaukee Gas Lt. Co., 182 Wisconsin St., Milwaukee, Wis.
 O. E. NORMAN, Peoples Gas Lt. & Coke Co., 122 So. Michigan Ave., Chicago, Ill.
 E. J. TUCKER, Consumers Gas Co., 19 Toronto St., Toronto, Canada.

One of the duties of the Committee will be to standardize the names of the

various positions occupied by employees in the accounting, commercial, production, and distribution departments of gas companies. Not only does there exist a great variety in the names given to various positions by different companies but in instances where a company runs more than one plant or works, that wide variety will be found in its own ranks.

A standard nomenclature adopted by one company for employees in its various departments has been furnished the members of the Committee and from this a nomenclature adaptable to all situations will be prepared.

Society of Gas and Electric Accountants

Through the courtesy of Mr. L. A. Coleman, Secretary, we are printing on page 88 of this issue a notice of the annual meeting of the Society of Gas and Electric Accountants and a paper presented at that meeting, "Job Order Systems from the Standpoint of the Engineering Department."

This is in line with the Section's policy of keeping our members in touch with what the accountants in all States are doing. The Secretary will be glad to receive notices of similar local accounting activities from the members for publication.

Service Charge Collection on Prepayment Meters

H. F. FREY, Chief Clerk, Allentown-Bethlehem Gas Company, Allentown, Pa.

THE Allentown-Bethlehem Gas Company has 14,000 prepayment meters in service, and with few exceptions they are of the three and five light type for which there is a twenty-five cent monthly service charge.

These meters are mostly located in communities populated by transient and foreign speaking consumers, who change residence frequently and do not apply to the company for gas service when moving in, or notify the company to shut off

Form B

No. Account

Meter No.

Index

No. of Quarters

Amt. Lifted, \$

Service Chgo. Coll. \$

Date

By

SERVICE CHARGE RECEIPT

Account No.

Meter No.

Amt. Removed

Service Charge Collected

..... Cents

Date

By

FOR ALLENTOWN-BETHLEHEM GAS CO.

upon which the collection is made. In this manner 80% of the service charges are collected. In all cases where the service charge is not collected, the service charge receipt is not detached, but is turned into the office. This is done to assist in balancing the cash, it being assumed that where the receipt is detached the service charge was collected, and where the receipt is attached, the charge was not collected.

After the meter reader has finished reading the route, the unpaid service charge accounts are turned over to a delinquent bill collector, who effects collection of all such charges as were not collected on the regular monthly reading date by the meter reader, using the same forms and system as the meter reader. Most of these skips are places where the meters are located in the basement and supply apartments or offices overhead, the occupants of which the meter reader can not locate, or in premises which are only occupied after working hours. The collector is required to do a considerable part of his work from 5 to 8 P. M., but in all cases where collections can not be made during regular working hours, advance payments for a number of months and payments at the office are suggested, and meet with considerable success.

Forms A and B were made up in close adherence to a couple of very satisfactory forms which served all collection purposes before the service charge was put into effect.

Society of Gas and Electric Accountants

At the annual meeting of the Society of Gas and Electric Accountants, of the Consolidated Gas Company of New York and affiliated companies, held on December 15, 1919, the following officers were elected for the year 1920.

President—L. H. WERNER
 Vice-President—A. L. HOLME
 Treasurer—E. S. YOUNG
 Secretary—L. A. COLEMAN

The annual dinner was held on the evening of the same date at the City Club, 55 West 44th Street.

The following committees have been appointed for the coming year:

Question Box Committee

C. G. DUFFY, *Chairman*
J. J. NORTON
J. R. MALONE
J. H. N. ARMSTRONG

Paper Committee

H. D. SWAIN, *Chairman*
W. C. PHELPS
M. H. SPEAR

Educational Committee

GEO. W. PARKHURST, *Chairman*
W. J. MEYERS
R. A. CARTER

Dinner Committee

J. E. SANBORN, *Chairman*
GEO. MCCORMICK
GEO. M. MOORE

Committee on Uniform Methods

H. M. BRUNDAGE, *Chairman*
A. L. HOLME
F. H. NICKERSON

Committee on Methods and Practices Covering Appliance Sales

J. H. N. ARMSTRONG, *Chairman*
F. R. BARNITZ
L. A. COLEMAN

Job Order Systems from the Standpoint of the Engineering Department*

THE Accountant is the historian of the company. It is his task to record events of the company's day to day operations, their character, their cause, their purpose and their cost. As has been well said, "the purpose of accounts is to record transactions and show facts."

The engineer is responsible for planning and executing many of the transactions which the accountant records in his books. He has personal knowledge of the facts. Evidently, therefore, there must be some link between the two departments by means of which the story of any transaction can be furnished by the engineer to the accountant. A job order system constitutes such a link and if well designed serves several related purposes as well.

In the affairs of a corporation a certain amount of routine is necessary in order to facilitate operations and in order to secure uniformity of practice and avoid confusion. If this routine is carried to extremes it becomes "red tape" and a hindrance, rather than a help, to efficiency. While this is a dan-

ger to be kept in mind in devising any system of procedure, it can be avoided by careful study of each step, with due consideration to the capabilities and limitations of the individuals concerned.

The transactions with which the engineer is chiefly concerned and to which the "job order system" applies, relate to physical equipment, including additions, improvements, retirements and repairs. The usual routine in connection with such transactions is about as follows:

1st. When it becomes evident or probable that certain work should be done, an estimate is made of the cost, based on a detailed description of the work. This should be accompanied by an estimate of the benefits to be derived. As these preliminary estimates are in the form of a recommendation or request, it is customary to make them out on a suitable requisition blank. In case the work requires the retirement of any equipment, this should be shown on the requisition, with the date and the order on which the equipment was installed, if this information is available.

* Report of Committee of Empire State Gas and Electric Association.

2nd. This requisition, if it originated elsewhere, next goes to the engineering department for investigation and alteration if necessary. It is then referred to the person or department with whom rests the authority to approve or disapprove the expenditure.

[It should be noted before proceeding further that the expression "engineering department" does not necessarily mean a separate and distinct department. The plant or distribution superintendent or the manager may be the engineer in charge of such matters and in cases of this kind, "engineering department" refers to these persons individually.]

3rd. If the requisition is approved, the next step is to prepare a "work order" and to this order a job number should be assigned which will identify all labor and material utilized and will also be used by the accountant in recording the transaction.

This completes, in general terms, the preliminary routine but at this point two questions arise in reference to which there are differences of opinion. These questions are, first, should the work order originate, that is, should it be prepared by the engineering department or the accounting department and second, should the engineering or the accounting department decide whether the work constitutes an addition, a retirement or a repair and to what accounts the expense should be charged? These questions give rise to the broader question as to what are the proper functions of the engineers and operating men in relation to a company's accounting.

The engineering departments, including therein the operating departments, have charge of the maintenance of equipment, apparatus and appliances used in production, transmission and distribu-

tion. They plan repairs, retirements, additions and extensions and supervise the work.

Based on their records and their technical knowledge, the engineering departments estimate annually the gross amount which will be needed during the coming year for additions and current maintenance and also what should be provided for deferred maintenance.

From their intimate acquaintance with the character and details of the work, when it is actually done, the engineering departments are in a position accurately to classify the cost under the headings required by the Uniform System of Accounts, provided they have familiarized themselves with the system, which they can readily do. The accounting departments, however, on account of the character of their work, cannot personally supervise operations and must therefore base their decisions on second hand information.

For this reason it would appear logical that the work order and the final allocation of the various items of cost should originate with the engineering rather than the accounting departments.

Familiarity with accounting principles and practice should extend not only to the heads of the various operating departments but also to the foremen who have actual and direct charge of the work. It is therefore suggested that the accounting and engineering departments should jointly prepare instructions which will be understandable by superintendents and foremen. Possibly these instructions should be divided into sections relating to different departments, so that the superintendents can more readily familiarize themselves with the accounting for the particular character of work of which they have charge.

Returning to the discussion of the job order itself:—we have outlined the routine up to the preparation of the order and the assignment of the job number. The operations from there on may be best explained by a description of the system in use by one company which is probably fairly typical, at least as to general principles.

If approved, a work order is written in triplicate and a job number assigned. The original is forwarded to the head of the department who will perform the work, the duplicate to the stockkeeper as his authority to issue material, and the triplicate to the timekeeper as his authority to charge the time. A large manila envelope with a brief description of the work, accounting numbers and job number is sent to the accounting department. The original requisition, with any changes noted, is kept by the engineering department. The accounting department places a job order page in the loose leaf job ledger and files the envelope in a vertical file. The order system is now ready for operation. The workmen place the job number on their time tickets, and also the account number, as specified on the order, for different parts of the work. This, the timekeeper places on the back of his copy. The stock clerk issues a stock slip bearing the job number for each article he disburses and forwards it to the accounting department where it is priced by the stock clerk and checked off the material and supplies stock cards kept in this department and then placed in the manila envelope.

When the job is complete the foreman sends his copy of the work order to the stockkeeper, as a notice to issue no more stock for the job. The stockkeeper forwards it with his copy to the timekeeper as a notice to charge no more time. The three copies go to the accounting department, where the stock slips are totaled

and the cost of the job detailed on the order. The order, with the stock slips goes to the engineering department where the costs are analyzed and, if thought necessary, a supervisor is sent to inspect the work. The records of the department are then corrected and the completed order sent to the accounting department, where it is entered on the job ledger and filed.

All maps, pole agreements, right of ways, correspondence, etc., accompany the order to the engineering department, where they are classified and filed.

It will be evident from what has been said that, if any such practice as that outlined above is pursued, the engineers and operators must not only be familiar with the system of accounts from a mechanical standpoint but also, to some extent, from a theoretical standpoint. Probably their most difficult task in this connection will be in differentiating between repairs and retirements and, therefore, a brief discussion of this question from the engineer's standpoint may not be out of order.

It is the practice of appraisers to inventory a plant by dividing it into units, but there is no agreement as to what a unit is. A power house or a transmission line is a unit made up of units which in turn are further divided. Where we should stop in establishing a plant unit is a question. A switchboard may be taken as a unit, but can be divided into panels, which can be again divided into the units of apparatus mounted on them. Likewise a transmission line can be divided into as many units as there are supports and a unit price assigned to each such unit.

If a definition of what is a plant unit can be agreed on, then a rule of what is a retirement and what a repair can be made.

The making of such a definition is an extremely difficult, if not an impossible, task and much, therefore, will have to be left to individual opinion. Here again the engineer's judgment should, on account of his greater familiarity with the situation, be better than that of the accountant.

If a distribution pole is a unit, then it would be a retirement if removed from service and would be charged off at the unit price and the new one capitalized. If any part of pole fixtures were removed and replaced, this would be a repair. Under the head of repairs would be included replacement of arms, insulators, etc.

In case of poles, services or other such units which exist in large numbers, it is often impractical to assign a unit cost based on individual value because of the bookkeeping involved. It is possible, however, to arrive at an average value and to charge off each pole retired during the year at this price, irrespective of size or what it carried. At the end of the year, by deducting the total poles removed and the total value of them and adding the poles installed and their *actual* cost in place, a new unit price is obtained. Units of equipment which are single large items, or small items which are few in number, may be carried on the inventory at their actual cost installed and retired at this value when removed.

A prime mover may be considered a plant unit and its auxiliaries, which can easily be identified, also units. A replacement of a condenser pump would be a retirement, but a replacement of a cylinder on a pump would be a repair.

A replacement of grates in a boiler would be a repair, as they would be part of the boiler unit and not easily identified. The replacement of a stoker would be a retirement, as it can easily be identified as a unit.

In case of all retirements the engineering department must specify the account which should be credited with the article, at the amount at which it stands on the books. It must also place a salvage value on the article, which is a debit to material and supply or some other account carried for the purpose. The accounting department inventory may carry a great many items on each account or in some cases a single item which includes a great deal of property. In the first case it is necessary for the engineer to determine which of the many items covers the particular equipment to be retired, and in the second case he will have to estimate the value of the portion of the equipment he removes and specify the single large item it is to come out of. For example, a generator was purchased complete with rheostat, or some other regulating device and later such device is discarded. In this case the engineer must appraise the device and advise the accounting department to what major equipment it belongs.

The foregoing discussion illustrates the necessity for close co-operation and for mutual understanding between the engineer and accountant and with a view to assisting in bringing about these conditions it is suggested that the Association create a committee composed of the chairmen of the Technical Committees and several representatives from the Accounting Committee.

There are many questions which such a committee could take up in addition to those mentioned above and we believe that it would be of great benefit to the member companies.

G. I. Vincent, Chairman, Gas Production Com.

R. M. Kellogg, Chairman, Gas Distribution Com.

L. C. Reynolds, Chairman, Electric Production Com.

W. C. Blackwood, Chairman, Electric Distribution Com.

ADVERTISING SECTION

GEORGE WILLIAMS, Chairman

HERBERT K. DODSON, Vice-Chairman

CHAS. W. PERSON, Secretary

MANAGING COMMITTEE

At Large

BRILL, A. P., Pittsburgh, Pa.
CLARK, WM. J., Mt. Vernon, N. Y.
COLLINS, D. J., Philadelphia, Pa.
DODSON, HERBERT K., Baltimore, Md.
GOULD, WM., Boston, Mass.
HANLAN, JAMES P., Newark, N. J.
MULLANEY, B. J., Chicago, Ill.
PRATT, T. B., New York, N. Y.
ROBBINS, M. C., New York, N. Y.
ROPER, GEO. D., Rockford, Ill.
RUTLEDGE, F. J., Philadelphia, Pa.
WILLIAMS, GEORGE, New York, N. Y.

Representing Affiliated Societies

ALLEN, GEO. W., Toronto, Can. (Canadian)
AUSTIN, E. E., Sumter, S. C. (Southern)
FRANKLIN, S. J., Millville, N. J. (New Jersey)
FUGATE, FRANK, Detroit, Mich. (Michigan)
HIGGINS, A. A., Providence, R. I. (New England)
JASPERSON, R. O., Chicago, Ill. (Wisconsin)
LESTER, F. M., Chicago, Ill. (Illinois)
MANTLE, G. D., Oakland, Cal. (Pacific Coast)
MARTIN, E. H., Des Moines, Ia. (Iowa District)
MULHOLLAND, S. E., Fort Wayne, Ind. (Indiana)
RALSTON, R. J., Philadelphia, Pa. (Pennsylvania)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Plan and Scope—M. C. ROBBINS, New York, N. Y.

Join These Publicity Boosters

THERE are forty-nine of them—all charter members—appointed by their companies or self-appointed to work with the Advertising Section in telling the story of gas to the American people.

What are they doing?

They are sending into Association headquarters at regular intervals copies of their advertising and publicity matter, news items about their companies and news items about the industry as a whole. They are constantly feeding into the Section, ideas and suggestions. When the Section issues one of its news articles for publication in the daily press, they place the articles with their local editors. And the articles are published, too!

Look at the list below. Are you on it? If not, you are hiding your light under a bushel. Come out of the dark; join the original forty-nine; carry your head full in the glare of life, and put your shoulders behind this national publicity and advertising campaign.

Forty-nine Publicity Boosters is a good chorus to *start* with. But it isn't

a big enough chorus to *carry on* with. We need a Publicity Booster for every gas company in the United States! That means a chorus of a thousand! Will we get it? We are asking you, "Will we?"

WINIFRED B. CHIDSEY, Derby Gas Co., Derby, Conn.
E. A. WILLARD, Portland Gas Light Co., Portland, Maine.
I. A. BRANDOW, Mohawk Edison Co., Schenectady, N. Y.
GEO. H. FULLERTON, Gas & Electric Dept., City of Norwich, Norwich, Conn.
JOHN J. QUINN, Citizens Gas Light Co., Quincy, Mass.
WILLIAM J. WELSH, New York & Richmond Gas Co., Stapleton, N. Y.
E. L. HARWOOD, Bridgeton Gas Light Co., Bridgeton, N. J.
H. M. COLLIN, Glens Falls Gas & Elec. Lt. Co., Glens Falls, N. Y.
W. L. SECORD, Westchester Lighting Co., Mt. Vernon, N. Y.
E. E. STEVENS, New Bedford Gas & Edison Lt. Co., New Bedford, Mass.
JEROME BRANDES, Phila. Suburban Gas & Elec. Co., Chester, Pa.
W. G. MURFIT, Bucks County Public Service Co., Newtown, Pa.

ANDREW F. PETTENGILL, Cambridge Gas Light Co., Cambridge, Mass.
 WM. P. ADAMS, Cumberland County Gas Co., Millville, N. J.
 L. N. YETTER, Atlantic City Gas Co., Atlantic City, N. J.
 W. K. EAVENSON, Fall River Gas Works Co., Fall River, Mass.
 J. L. TUDBURY, Salem Gas Light Co., Salem, Mass.
 C. A. NASH, Tri-City Railway & Lt. Co's., Davenport, Iowa.
 A. J. SMITH, Concord Light & Power Co., Concord, N. H.
 LEROY D. PARMELEE, Municipal Gas Co., Albany, N. Y.
 ARTHUR F. SHORT, Providence Gas Co., Providence, R. I.
 CHARLES OTTEN, JR., Plymouth Gas Light Co., Plymouth, Mass.
 E. G. BUCKLIN, Hyattsville Gas & Electric Co., Hyattsville, Md.
 AUSTIN BURT, Citizens Gas & Electric Co., Waterloo, Iowa.
 KATHERINE POWERS, Peoples Gas & Electric Co., Oswego, N. Y.
 G. M. BROWER, Thornapple Gas & Electric Co., Hastings, Mich.
 O. G. BENNETT, Northern Westchester Ltg. Co., Ossining, N. Y.
 G. L. CULLEN, Harrisburg Gas Co., Harrisburg, Pa.
 W. E. DERWENT, Geo. D. Roper Corporation, Rockford, Ill.
 L. L. MOORE, The U. G. I. Contracting Co., Philadelphia, Pa.
 E. H. BEAM, Pueblo Gas & Fuel Co., Pueblo, Colo.
 JOSEPH P. MACSWEENEY, Rochester Gas & Elec. Corp., Rochester, N. Y.
 CHAS. A. HARRISON, Cheyenne Lt., Fuel & Power Co., Cheyenne, Wyoming.
 W. T. WARD, Michigan Light Co., Saginaw, Mich.
 L. C. STOCKING, Rockford Gas Lt. & Coke Co., Rockford, Ill.
 E. D. CLARY, Burlington Gas Light Co., Burlington, Iowa.
 J. F. TRAZZARE, Atlanta Gas Light Co., Atlanta, Ga.
 E. A. HILLS, Consumers Gas Co. of Toronto, Toronto, Canada.
 ROBERT D. SHIELDS, Syracuse Lighting Co., Syracuse, N. Y.
 W. H. MARTELL, Austin Gas Company, Austin, Minn.

R. C. JONES, San Antonio Public Service Co., San Antonio, Texas.
 C. F. ZEEK, Pensacola Gas Company, Pensacola, Fla.
 CLYDE H. POTTER, Southern Counties Gas Co., Los Angeles, Cal.
 H. A. JOHNSON, Omaha Gas Company, Omaha, Nebraska.
 J. H. Y. KIDD, Central Hudson Gas & Electric Co., Newburgh, N. Y.
 HILMAR PABST, Portland Gas & Coke Co., Portland, Oregon.
 W. F. O'DONNELL, The United Gas Improvement Co., Philadelphia, Pa.
 R. SHACKLETTE, Big Rapids Gas Co., Big Rapids, Michigan.
 T. J. PROTHEROE, Southern California Gas Co., Los Angeles, Cal.

GAS PUBLICITY DISSEMINATED BY A. G. A.

Released for Publication in Newspapers of Friday, Jan. 23

Franklin K. Lane, Secretary of the Interior, says we are living in an age of gas.

"Our civilization has been the product of power plus steel", says Mr. Lane. "Those two words probably characterized the 19th Century; but this age—at least in the United States—seems to be particularly an age of gas, an age of petroleum."

According to the American Gas Association, 130 East 15th Street, New York City, Mr. Lane's statement is substantiated by figures just compiled. They show that 1,166 artificial gas companies in the United States now supply more than three hundred billion cubic feet of gas to 8,500,000 customers who with their families represent approximately half of the population of the nation. Over four billions of dollars is invested in these plants to maintain an uninterrupted service and to furnish gas of standard and uniform quality for lighting, heating and industrial purposes.

Released for Publication in Newspapers of Wednesday, Jan. 28

The American Gas Association has issued a warning to gas consumers against the use of cheap unfit tubing in connection with gas appliances. According to the Association, such tubing constitutes a definite menace to human life and is responsible for many of those accidents attending the use of gas heating devices which are reported every year with the recurrence of cold weather.

"Cheap tubing is a false and dangerous economy", said Oscar H. Fogg, Secretary-Manager of the American Gas Association. "By its use the consumer deliberately forfeits the protection of all those safeguards in the use of gas which have taken years of study and experiment to perfect. Gas companies cannot control the sale of this tubing, but they can and do warn the public most emphatically of the danger attending its use."

Released for Publication in Newspapers of Friday, Jan. 30

The important part that the gas industry of the country is playing in the conservation of our natural resources is revealed in a statement issued from headquarters of the American Gas Association, 130 East 15th Street, New York City.

Taking up the subject of coal and its utilization, the Association says:

"Every pound of coal that is burned as fuel before it is distilled means that the nation is losing just that much of its resources. The gas industry is a party to no such waste as that.

"Instead of completely destroying the most valuable elements contained in coal by burning it to generate a little heat, the gas industry separates the coal into its constituent parts, making each part available for use in the most efficient and effective manner. It is evident, therefore, that the gas industry is one of the greatest conservators of our coal supply.

"It is estimated that 7,000,000 tons of bituminous coal were used in gas manufacture in 1919. From this vast amount of coal the gas industry extracted and delivered free of all impurities gas of a high illuminating and heating value and in addition recovered a number of valuable by-products, such as coke, tar and ammonia.

"The industry's work in the production of toluol, a raw material for the manufacture of high explosives, stands out among the important contributions to the success of our war program—an activity from beginning to end free from any suspicion of profit or self-interest, and solely in the public service."

(Released for Publication in newspapers of Thursday, Feb. 12.)

A bill is to be introduced in the New Jersey Legislature requiring that every meter for measuring gas be fitted with a special device so that the index can be turned back to zero each time a reading is made by the gas company representative. A Philadelphia newspaper describes the bill and says it is an attempt to "tame the wild, wild gas meter," so as to prevent disputes over gas bills.

According to the American Gas Association, which represents a majority of the gas companies of the country, "the wild, wild gas meter" is not only the most accurate measuring instrument of its kind made but it is more accurate than 95 per cent. of the timepieces we depend upon every day.

"The gas meter as invented by William Richards, in 1843," says the Association, "is with minor improvements the meter in use today. It is the most accurate measuring instrument of its kind made. It is more accurate than 95 per cent. of all timepieces.

"No delicate spring is required to make it go. Like the registering turnstile in common use today, the gas meter acts only when something passes through it. The clockwork is not set in motion and the indication hands cannot move fast or

slow except as more or less gas passes through the meter and make them move.

"Public Service Commissions examine meters from time to time to see that they are accurate, and gas companies also do the same thing. This is an undertaking as big as it is important, for there are more than eight million meters in use in the United States. Obviously they do not need to be "tamed," for if they did our Public Service Commissions would have time for nothing else and they would eventually give up the job in despair and go into the wild animal business for some real amusement."

Letting George Do It

The second full-page newspaper advertisement in the two-million-dollar publicity campaign now being carried on by the National Canners Association of Washington, D. C., is devoted to present day miracles. In the first paragraph, gas is mentioned as one of the miracles, as follows:

"The days of miracles have never passed. Never was the world so filled with miracles as it is today—the miracle of the faucet which brings us water from miles away—the miracle of the gas flame by which we cook without the discomforts of old-time methods—the miracle of the telephone."

The National Canners Association is right. Gas is a miracle. But why should we not be shouting that truth ourselves?

Covering the Town

The first news article issued by the Advertising Section reached the Cambridge (Mass.) Gas-Light Company without delay. It was given to Mr. Andrew F. Pettengill for distribution to the local editors. Did he get it published in a single Cambridge paper? He did not. He got it published in all four Cambridge papers.

Gas is Not Bought on Faith

The New York and Richmond Gas Company recently sent out an enclosure with its gas bills, telling the consumer how to read his meter and how to check his gas consumption.

"Gas is a commodity which does not ask to be bought on faith," stated the enclosure. "It is measured on your premises as you use it by a meter bearing the seal of the Public Service Commission. You can read the meter daily or weekly, or verify the readings which appear upon the bill rendered—if you don't know how, call here and we'll show you—and satisfy yourself that you get what you pay for.

"Our company stands ready at all times to aid you in securing the most efficient results from the use of gas, but cannot — without cooperation — control the amount or the manner of use, after gas has passed the meter and is consumed.

"Wisdom as well as common honesty leads us to strive for public confidence and to see that you get what you pay for. As the Seller we do this. As the Purchaser, we want you to do likewise. You are more heavily obligated to your good self than we are."

Nailing Every Lie That Is Printed

Every published criticism of the largest corporation in the world is answered by a personal letter, accompanied by such data or evidence as may be necessary to show that the criticism or misrepresentation was unjustified. No publication however obscure or innocuous is overlooked.

The A. G. A. is writing a number of "personal" letters of this character for the gas industry. And it will continue to write them until the truth is told about gas.

With the Magazines

The January issue of *Popular Mechanics Magazine* contains six articles on gas and gas appliances. *Popular Science Monthly* for December has three articles and *Illustrated World* one article. All three magazines are now being served with material by the Advertising Section and the various writers who contribute regularly to them are also in communication with the Section. In the near future *Scientific American* will begin the publication of a series of articles by Mr. Ehlers, Industrial Fuel Engineer of the A. G. A., on "Gas Fuel for Industrial Purposes." These articles will receive a wide distribution outside the regular readers of *Scientific American*. Other articles will follow in other magazines.

Men or Women?

Should the appeal in a gas-range advertisement be directed to men or to women? It would seem as if the women were particularly favored in this respect. However, the Cumberland County Gas Company picked out the men shortly before Christmas and carried the following message to them:

"Attention Men: Give her an all year 'round Christmas gift. That Christmas dinner is only a few days off. Has wife or mother a good reliable Gas Range to prepare it with, or has she one which needs continuous watching while in use?

Gas Bills and the Red Cross

Albert R. McAllister, president of the Bridgeton (New Jersey) Chamber of Commerce, recently paid a rare compliment to the Bridgeton Gas Light Company. He said that the most successful Red Cross campaign ever held in the town resulted from the use of the back of gas bills, which go into practically every home in Bridgeton.

Pity the Poor Lawyer

One of the best known and most successful publicity men in the country once remarked: "In the use of English which the people can understand, avoid lawyers."

This recalls the story told about Mr. Doherty, when his "So The People May Know," Franchise Talks were being eagerly read by literally every one in Toledo. When one of the advertisements was finished, an official timidly suggested to Mr. Doherty: "Don't you think you'd better have the lawyers go over your copy before it goes in?" "I should say not," replied Mr. Doherty. "I want everybody to read it!"

Who Owns the Gas Company?

The Peoples Gas Light and Coke Company of Chicago, says in its booklet entitled "Getting Good Gas Service:"

"This company is owned and controlled by its stockholders. There are nearly 7,000 of them, about 4,000 of whom live in Chicago and Illinois. Your neighbor may be one of them for they are in all walks in life — mechanics, policemen, small merchants, school teachers, clergymen, lawyers, doctors, dentists and stenographers—and many of them are widows and minors, who acquired their holdings by inheritance. Remember this when some political demagogue is foaming about "the gas barons."

"When Chicago had many gas companies, you remember, the service was much poorer and gas rates generally were higher than they are now, although the prices of other commodities were lower than they are now. The better service and lower rates of today are due to having *only one* gas company for the entire city and that one under efficient, progressive management. Reductions in gas rates have come always by action of the company, never by political agitation."

Gas Bill Memorandum Explains Rate Increase

The following note was attached to all December gas bills sent out by the Public Service Gas Company, following the increase in rates as reported on page 610 of our Nov.-Dec. MONTHLY.

TO OUR CUSTOMERS:

Increased costs of everything that enters into the manufacture and distribution of gas made it necessary that the selling price be raised to cover present day conditions.

It was in 1912, seven years ago, that the base rate for gas was fixed at ninety cents a thousand cubic feet.

In 1912 coal cost \$3.79 a ton, now it costs \$7.06 a ton; gas oil then cost 2.45 cents a gallon, now it costs 5 cents.

Coal increased in cost 86 per cent., gas oil increased 104 per cent., distribution wages rate increased 121 per cent., works rate increased 145 per cent. Taxes increased 200 per cent. between 1912 and 1919.

To meet these increases a new schedule of just and reasonable rates became effective with December sales.

Public Service Gas Company

Two Copy Writers

"Why did the miners turn down decisively the offer made by Dr. Garfield and accept that made by the President?" asks *Printers' Ink*.

"The two proposals were very similar, the amount of immediate increase was the same—fourteen per cent.—both messages suggested a future adjustment based upon a fair and impartial investigation. The concrete and actual differences in facts were minor, yet the messages when read carefully were of an entirely different nature.

"Mr. Wilson's is by far the more human document. He first pointed out the confusion in the minds of the public and both parties as to the points of issue, he summed up the previous negotiations, touching on the higher wage increase suggested by Secretary Wilson which the miners were asked to forego. He laid stress on the fact that under the arrangement suggested, the miners were assured immediate steady employment, and

prompt investigation and action upon questions not settled to their satisfaction.

"In Garfield's proposal the entire stress was laid on the 14 per cent. increase; it showed little knowledge of the other man's viewpoint. Mr. Wilson seems a far better copy writer than the Fuel Administrator. Both men had practically the same piece of merchandise to sell—one harped on price alone, the other told of other quality factors, made a promise of promptness to overcome the argument of labor that arbitration processes involve long delays, but at the same time confronted the miners with the challenge that a continuation of the strike against the public interest was foredoomed to failure.

"Men upon whose written words the presentation of merchandise and business ideals to the American public depend, can draw obvious lessons from a careful comparison of the two pieces of copy. One of them failed, the other brought home the bacon."

COMMERCIAL SECTION

C. A. MUNROE, Chairman

LOUIS STOTZ, Secretary

J. P. HANLAN, Vice-Chairman

MANAGING COMMITTEE — 1920

At Large

BARROWS, GEO. S., Providence, R. I.
 BARTLETT, C. E., (Mfr.) Philadelphia, Pa.
 BENNITT, GEO. E., New York, N. Y.
 BOND, C. O., Philadelphia, Pa.
 BUCKMINSTER, ROLLIN, Pawtucket, R. I.
 BURNS, J. J., St. Louis, Mo.
 CHRISTMAN, H. S., Philadelphia, Pa.
 CLARK, H. H., Chicago, Ill.
 CLARE, W. J., Mt. Vernon, N. Y.
 DAVIES, J. E., Chicago, Ill.
 DODSON, H. K., Baltimore, Md.
 DOULL, R. S., New York, N. Y.
 ELSMAN, RALPH, Brooklyn, N. Y.
 GASTON, LUTHER, Spokane, Wash.
 GOULD, WM., Boston, Mass.
 HUNTER, HARRY W., (Mfr.) Baltimore, Md.
 JARDINE, BERT H., Knoxville, Tenn.
 JASPERSON, R. O., Chicago, Ill.
 KARSHNER, G. M., New York, N. Y.
 KING, THOMSON, Baltimore, Md.
 KNAPP, F. H., (Mfr.) Pittsburgh, Pa.
 LOEBELL, H. O., New York, N. Y.
 MACSWANEY, J. F., Rochester, N. Y.

MAXON, H. R., (Mfr.) Muncie, Ind.
 MUNROE, C. A., Chicago, Ill.
 MYERS, J. B., Philadelphia, Pa.
 PEFFLY, I. W., (Mfr.) New York, N. Y.
 PETTENGILL, H. J., Jr., Woonsocket, R. I.
 PISER, THEO. H., Boston, Mass.
 POST, A. P., Philadelphia, Pa.
 RASCH, W. T., New York, N. Y.
 STANNARD, CLARE N., Denver, Colo.
 TRUMBULL, G. R., New York, N. Y.
 VINCENT, G. I., Syracuse, N. Y.
 WRIGHTINGTON, E. N., Boston, Mass.

Representing Affiliated Societies

BARTON, WM. H., Portland, Ore. (Pacific Coast)
 BORDEN, A. W., Hastings, Nebr. (Iowa Dist.)
 BOWLIN, M. A., Macon, Ga. (Southern)
 BRANDES, JEROME, Chester, Pa. (Pennsylvania)
 BURKE, E. J., Indianapolis, Ind. (Indiana)
 CHAMBERLAIN, G. R., Grand Rapids, Mich. (Michigan)
 CRAFTS, H. C., Pittsfield, Mass. (N. E. Gas Eng.)
 FLAUT, J. J., New Orleans, La. (South Central)
 HANLAN, J. P., Newark, N. J. (New Jersey)
 MCINTYRE, W. H., Ont., Can. (Canada)
 ST. JOHN, JOHN, Madison, Wisc. (Wisconsin)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Sales Development—WM. GOULD, Boston, Mass.
Compensation (Sub)—G. M. KARSHNER, New York, N. Y.
Filing in the Valleys in Gas and Appliance Sales (Sub)—
 WM. GOULD, Boston, Mass.
Maintenance (Sub)—ROLLIN BUCKMINSTER, Pawtucket,
 R. I.
Putting Non-Profitable Consumers on a Profitable Basis
 (Sub)—B. H. JARDINE, Knoxville, Tenn.
Sales Campaigns (Sub)—H. J. PETTENGILL, Jr., Woon-
 socket, R. I.
Work Schedule (Sub)—G. I. VINCENT, Syracuse, N. Y.
Gas Lighting—THEO. H. PISER, Boston, Mass.

Heating—GEO. E. BENNITT, New York, N. Y.
Industrial Fuel Sales—H. H. CLARK, Chicago, Ill.
Furnace Performance Standards (Sub)—I. LUNDGAARD,
 Rochester, N. Y.
Improvement of Atmospheric Burners (Sub)—JEROME
 BRANDES, Chester, Pa.
Proportional Mixing (Sub)—CHAS. C. KRAUSSE, Balti-
 more, Md.
Recuperation and Regeneration (Sub)—H. O. LOEBELL,
 New York, N. Y.

Commercial Section Activities

PRACTICALLY all the committees of the Commercial Section have been appointed and are actively engaged in the specific duties outlined in the manual of activities published on page 27 of the January 1920 A. G. A. MONTHLY.

The chairmen of the various committees and sub-committees will meet with Mr. Munroe and Mr. Hanlan, Chairman and Vice-Chairman of the Section, at Association headquarters, on January 28. The progress of the Section's work will then be thoroughly discussed and decisions reached for the continuance thereof. A detailed report of such pro-

gress will be published in the next issue of the MONTHLY.

A meeting of the Industrial Fuel Sales Committee will be held in Chicago at the office of the Chairman, Mr. H. H. Clark. This is the first meeting of the Committee this year and the principal topic of discussion will be "How Can this Committee be of Greatest Value to the Gas Industry?" It is hoped that the result of this meeting will be the adoption of a definite plan of procedure whereby industrial fuel sales will gain added impetus.

The Sub-Committee on Performance Standards is composed of:

I. LUNDGAARD, Rochester, N. Y., *Chairman*
HORACE H. CLARK, Chicago, Ill.
W. B. EDDISON, New York, N. Y.
PROF. ALFRED H. WHITE, of the University
of Michigan.

The program of the Committee has not been fully decided but will probably consist largely in establishing factors showing the relative efficiencies of various kinds of fuel gases. The services of Prof. White will be most valuable and the facilities of the laboratory of the University of Michigan will be available in the experimental and testing work which the Committee will undertake.

The Sub-Committee on Proportional Mixing is composed of:

CHAS. C. KRAUSSE, Baltimore, Md., *Chairman*
W. W. CUMMINGS, Boston, Mass.
HENRY L. READ, New York, N. Y.
A. L. PALMER, New York, N. Y.

The report prepared by the Committee in 1919 has been printed in pamphlet form and is available without charge to all who are interested in the subject. Requests should be made direct to the Association headquarters.

Sub-Committees of the Sales Development Committee are all at work on their particular problems.

The Work Schedule Committee, consisting of:

G. I. VINCENT, Syracuse, N. Y., *Chairman*
G. T. MACBETH, Mt. Vernon, N. Y.
J. M. ROBERTS, Chicago, Ill.
W. G. STERRETT, Chester, Pa.
JOHN L. TUDBURY, Salem, Mass.
L. B. WILSON, Jr., Baltimore, Md.

has already prepared a preliminary report. A meeting of the Committee will be held at an early date when the report will be issued in final form.

Mr. H. J. Pettengill, Jr., of Woonsocket, R. I., has been appointed Chairman of the Sales Campaign Committee in place of Mr. H. K. Dodson, who has left the gas company at Baltimore and is unable to continue as head of this important Committee. The Sales Campaign Committee will hold a meeting at an early

date to work out in detail assistance to be given companies in carrying out the sales schedule recommended by the 1919 Committee. In the November-December issue of the A. G. A. MONTHLY there was published the monthly sales schedule which has been advocated.

In our window display suggestions shown on pages 101-103 are suggestions of displays to be used during the second two weeks in February and the first two weeks in March, according to schedule.

Companies and members are urged to adopt this schedule and plan their advertising demonstrations, window displays, and other sales activities to conform to it.

The leader for February, gas room heaters, and the display for the second week were shown in our January number.

During the second week of February the coming Spring building boom is to be featured and architects, builders and contractors should be approached to insure the proper and adequate piping of all buildings which they will erect. By proper newspaper and other publicity, attention of the prospective and present home-owners should be directed to the wisdom of adequate gas supply for the up-to-date appliances which will be used.

For the third week a display of cake griddles and suitable advertising to tie up with demonstrations and window displays will educate the consumer to the advantages of gas. By centering attention on a seasonable food like griddle cakes you indirectly create a use for gas.

The same thing applies to the proper care of gas appliances. The appliance which is kept in spick and span condition will certainly be more apt to be used than one which becomes dirty, rusty and out of adjustment. You can do your share to help the housewife take pride in the appearance of her kitchen and when you

do that you may be assured that gas appliances will be used more generously.

The Gas Lighting Committee will soon have its first meeting and it is the intention to make a careful survey of gas lighting conditions and to offer definite recommendations which will help to hold and increase the gas lighting business. There is a considerable percentage of gas output used for gas lighting and the business usually obtains the maximum rate. Such profitable business should not be neglected. The Committee will have something interesting to disclose upon the completion of its investigations.

The Heating Committee will, of course, not be able to reach any final

conclusions until the end of the present heating season. It is proceeding along a definite line of study and investigation of the heating load and will undoubtedly bring out a report of great value to the industry.

All members are requested to keep Association headquarters informed of all their activities during the present year. When plans are decided upon it will be advantageous to other companies to know that they are well in advance of their being put into operation. Such exchange of sale plans will be valuable and our members are urged to keep the Association regularly informed.

Window Displays and Publicity Material to Fit Sales Schedule



Display for February 15-21

No. 11a

Cooking Appliances

The A. G. A. Schedule of Special Sales realizes the importance of small devices which, while not burning gas themselves, encourage the use of and increase the satisfaction to be derived from the gas range.

This display can be either mechanically devised or set-up for its picture effect only.

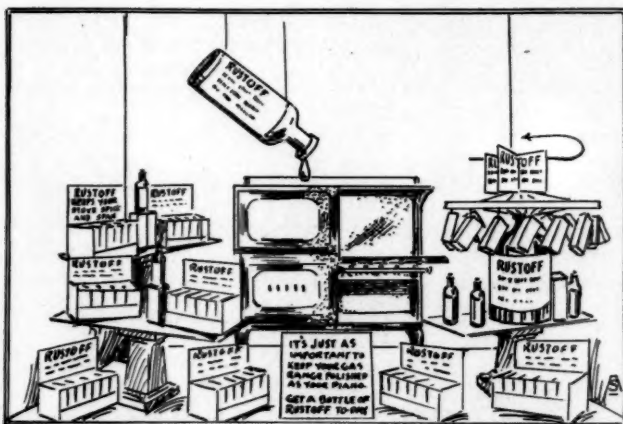
In either case, the background is composed of a solid piece of wall board through which the letters are cut in stencil effect. The coffee cup, plate of cakes and syrup pitcher are also cut out in silhouette. The whole front of the board is then covered with thin orange cloth, or if care is taken to do a good job, a transparent paper can be used. Now paint in with water color or other light paint, the cakes, cup and pitcher.

The background is then ready to be lighted up from behind and the transparent letters and pictures showing through will prove very attractive. The lighting can be either steady or in flashes.

The boy's head and hands are to be cut from separate pieces of wall board and properly painted. The picture effect will be obtained by placing these three parts in slight relief against the orange background.

The mechanical arrangement suggested, consists of mounting the head and hands on pivoted wooden and wire arms connected to an oscillating electric fan placed behind the background. The boy then expresses his "yum yum" delight by wagging his head and hands from side to side.

The pyramid of cake griddles and the two signs complete this attractive display.



For the Long Life and Beauty of the Gas Range

No. 11b

Miscellaneous

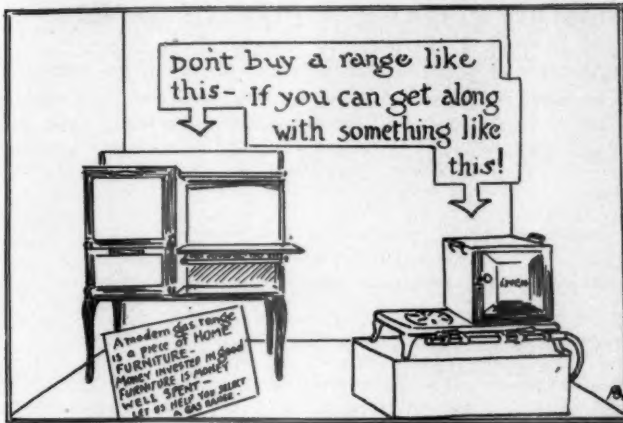
Two devices are used here to attract attention to the special gas range oil which your company recommends. The first is the contrast on the gas range itself between the neglected and the carefully oiled parts. To prepare the range for the exhibit, expose it to the weather for several days until it has acquired a light coat of rust. Then carefully clean about one-fourth of the surface from top to bottom.

A large cut-out bottle painted to represent the oil sold is suspended above the clean portion of the range with a large drop of the oil just leaving the mouth of the bottle.

The second device suggested depends upon the attractive value of motion. Label a large spring water bottle to resemble the oil bottle, fill it with a colored fluid and place it on a low pedestal. Then balance an old bicycle wheel (with hub and bearings intact) securely on the rim of the bottle, so that it will revolve easily. Suspend empty oil cartons from the rim and spokes of the wheel and fix in place a cross panel sign (like a revolving door). The wheel can be made to revolve "mysteriously" by directing a current of air against the rim of the wheel from a fan concealed behind the range.

Arrange artistically the manufacturers' dummy cases and the actual bottles of oil. A pedestal on the left side balances the revolving device on the right hand side.

This display is designed for the week of February 21-28, of the A. G. A. Sales Schedules.



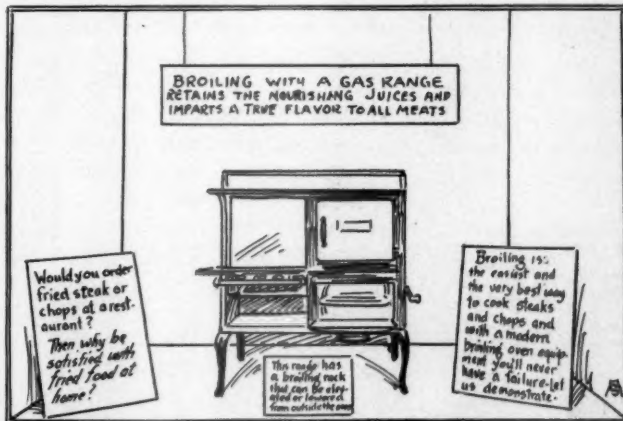
Ranges No. 11c
Feb., 1920

Who Figures it
That Way?

This very simple window suggests a comparison which is bound to arrest the attention of the householding passer-by. In place of the hot plate, a gas range of the very early days, if procurable, can be used. If your window fronts a business street where many business men pass, change the sign to read, "Don't buy your wife a range like this—if she can get along with something like this!"

The point can be made to strike home much harder if in the foreground a small duplicate of this arrangement is fitted up with a toy "one hoss shay" contrasted with a modern coupé, or something similar.

The suggestion offers unlimited opportunities for elaboration.



Ranges No. 11d
Feb., 1920

Health Cookery

The A. G. A. Sales Campaign Schedule designates the second week of March for the demonstration by broiling on a gas range. It is excellent business policy to teach the owners of your appliances how to get more extensive use or more perfect results from them. The demonstration in this case may perhaps best be carried on in the sales room, but the window display should call emphatic attention to it.

As shown here, the signs are the main attraction. An element of color and pleasing suggestion can be secured by displaying papier mache representations of broiled steak and chops.

VALLEY PERIODS IN GAS & APPLIANCE SALES

The following request for information has been sent to all our gas company members. The form as sent out provides a space for the figures of each month through the year. If your company has not returned its answers, the Association and the Committee on this subject urge you to do so at once.

The Committee on "Filling in the Valleys of Gas and Appliance Sales" of the American Gas Association is striving to get definite information from its members with the idea of analyzing these reports and then making recommendations which we hope will repay you for this trouble. These figures will be treated confidentially.

Monthly make of gas for 1919 as indicated by Works Station Meter (corrected) also monthly amounts in dollars of all gas appliances and jobbing sales during 1919, are the figures requested. Thank you.

GAS MADE STATION METER (Corrected)		GAS APPLIANCE AND JOBBING SALES (Dollars)	
1919		1919	
Jan.		Jan.	
Feb.		Feb.	
Mar.		Mar.	

SIGNED

COMPANY NAME

BY

NOTE: Return direct to
AMERICAN GAS ASSOCIATION,
130 E. 15th St., New York, N. Y.

Respectfully yours,

H. C. CRAFTS

ROLLIN BUCKMINSTER

F. A. WOODHEAD

WM. GOULD, *Chairman*, Committee on Filling in the Valleys of Gas and Appliance Sales.

THE NATION'S LIGHTING BILL

A lighting expert says that about \$200,000,000 worth of light is wasted every year in this country through failure to keep windows, globes, reflectors and other light sources free from dust and dirt. The lighting bill for the nation is about \$500,000,000, and if this expert is right, we are wasting two-fifths of this.—*Gas Industry*.

Gas Forms Efficient Core Oven Fuel

BY W. A. EHLERS

NOTE.—This article appeared in the January 1 issue of *"The Foundry,"* a semi-monthly journal devoted to all branches of the foundry trade, published at Cleveland, Ohio. Mr. Ehlers of the A. G. A. headquarters staff submitted it in accordance with our present policy of supplying facts about gas to industrial papers outside our own immediate field. The title suggested by the author was "The Use of Gas in Core Drying". We call attention to the significance of the change made by the editor of *"The Foundry"* when, with some slight abbreviations, he accepted the article for publication.

IT IS generally admitted that the subject of core drying in the foundry does not receive the attention it deserves. The methods usually followed in this work are those advocated years ago, and are by no means the most efficient means of obtaining uniform results. Aside from the crude method of heating, many core-makers have vague ideas about the necessary temperatures in the core oven or how long a core should be baked. Heavy losses in time, materials and the slowing down of production may be traced to inferior methods of core drying. Underbaked cores or molds develop steam when brought into contact with the molten iron. The steam must have free passage to escape, or blow holes will be formed in the casting. Overbaking, caused by excessive temperature and localized heating produces cores which are weak and therefore unfit for use. There are almost as many types of core and mold drying ovens as there are opinions on the kind of fuels to be used and the manner of applying and utilizing the heat from these fuels. It is just as important, or even more so, that a core oven should be properly heated as an oven in which bread or pastry is baked. The wastage from improperly baked cores amounts to more in actual value than when bread and pastry are improperly baked. The success which has been met in the design of an oven which will bake bread uniformly is an indication of what might profitably be done in core and mold

ovens. There is perhaps no item of greater importance than that of determining the proper temperature at which the cores should be baked, and the length of time they should be subjected to that temperature. In most cases, particularly in large ovens, the temperature varies from 800 to 900 degrees Fahr. in portions of the oven nearest the fire to 200 to 300 degrees in other places. It is customary to build an exceedingly hot fire, allow it to run for an hour or two, then allow it to die out. Uniform temperature in the oven under this method is impossible.

Gas for core drying or other heating operations can be easily applied, the burners uniformly distributed, and automatically controlled. Among the numerous advantages of gas (either natural or city gas) may be mentioned:

Time of heat is shortened, therefore increased capacity is secured with a given equipment. No burned cores or molds result. The ovens may be fully charged. Binding agents in cores and molds are not burned out. Maintenance charges are reduced.

In order to substantiate some of the above claims for gas fuel the following results taken from some recent installations may be of interest. A test extending over one week was made on an oven, 10 x 16 x 24 feet, heated with city gas. The truck and shelving alone weighed 25,000 pounds. Meter readings and temperatures were taken every hour, and the

cores were weighed every day. Seventy-five tons of baked cores were produced during the week at an average cost of \$.48 per ton for fuel and power. Likewise a careful test was made using coke for fuel at \$.75 per ton in stock at the plant. Allowing for all items chargeable to the coke fired ovens, the cost to produce a ton of cores amounted to \$.76. Another plant gives results similar to those mentioned. In this plant cores weighing from $\frac{1}{4}$ to 50 pounds were placed, some on trucks and some on shelves, the total being 4,000 pounds. Gas was burned $2\frac{1}{2}$ hours until a temperature of 345 degrees Fahr. was obtained. It was then turned off and the baking continued from the heat absorbed by the oven.

The results of these tests indicate that the cost of gas and power per ton of cores was \$.94 as against \$1.09 with coke and wood. In this vicinity the cost of gas per 1000 cubic feet was about 50 per cent. higher than in the other installation; but even under these conditions a saving was shown by the use of gas fuel. It was also found that all cores were properly baked regardless of weather conditions. Those on the floor of the oven were baked as well as those on top. In one case 6000-pound and $\frac{1}{4}$ -pound cores were baked at one time.

CONFIDENTIAL GAS STATISTICS

Now is no time to delay the mailing of your "confidential statistics" sheet to Association headquarters. These blanks, calling for figures on the yearly production or purchase and sale of gas, on supplies, equipment, and employees, on residuals, consumers, meters and appliances sold, on maintenance and rate schedules, etc., were sent to every gas company in

the United States, about the middle of December.

Every gas company in the country should send in its answers at once—the averages, summaries and general information which will be compiled and published from the individual confidential figures will be valuable to every gas company. There cannot be a shadow of excuse for delay on the part of any of our 325 company members.

Inquiries are constantly reaching us, not only from units within the gas industry but from other sources, which cannot be adequately answered until definite information has been supplied. The A. G. A. is taking the initiative in an important matter and it asks your co-operation. Send in your answers at once. Additional blanks will be furnished upon application to headquarters.

A LETTER ABOUT YOUR BUSINESS

This is the title of a booklet prepared by the Illinois Committee on Public Utility Information for distribution to utility company security holders and others interested in the financial welfare of these companies. The booklet has been passed upon by some of the most prominent utility and banking men of Illinois and its object is to help cultivate a better relationship between the security holder and the public. There is a wealth of valuable information in it that deserves a wide dissemination.

A charge of \$25 per thousand booklets and \$4 per thousand envelopes is made to cover bare cost of printing and handling and the distribution may be made in any one of three ways which will be explained by writing to the Committee.

MANUFACTURERS SECTION

W. GRIFFIN GRIBBEL, Chairman

GEORGE S. BARROWS, Vice-Chairman

W. W. BARNES, Secretary

MANAGING COMMITTEE — 1920

At Large

BARNES, W. W., New York, N. Y.
BARROWS, GEORGE S., Providence, R. I.
BRILL, A. P., Pittsburgh, Pa.
BRUCE, HOWARD, Baltimore, Md.
COLLINS, D. J., Philadelphia, Pa.
CRANE, WM. M., New York, N. Y.
DEHART, J. S., Newark, N. J.
GRIBBEL, W. GRIFFIN, Philadelphia, Pa.
KNIGHT, O. T., Cleveland, Ohio
LOHMEYER, H. B., New York, N. Y.
MASON, SIDNEY, Gloucester, N. J.
NORTON, HARRY A., Boston, Mass.
PEFFLY, IRVING W., New York, N. Y.
REES, RICHARD, Kalamazoo, Mich.
ROBERTS, EARL W., Detroit, Mich.

ROPER, GEO. D., Rockford, Ill.
SCHAEFFER, W. L., Pittsburgh, Pa.
SCHALL, H. D., Detroit, Mich.
STITES, TOWNSEND, Gloucester, N. J.
WICKHAM, LEIGH, St. Louis, Mo.

Representing Affiliated Societies

BABCOCK, C. B., San Francisco, Cal. (Pacific Coast)
BARTLETT, C. E., Philadelphia, Pa. (Pennsylvania)
CHAPIN, C. H. B., New York, N. Y. (Em. State G. & E.)
ECCLES, GEO. W., Waltham, Mass. (N. E. Gas Eng.)
GIBSON, W. R., Toronto, Can. (Canadian)
LONG, H. J., New Brunswick, N. J. (New Jersey)
McCULLOUGH, CHAS., Milwaukee, Wis. (Wisconsin)
MILLER, THOS. D., Detroit, Mich. (Illinois)
SEIDENGLANZ, C. H., Dallas, Tex. (South Central)
SHALL, H. D., Detroit, Mich. (Michigan)
WARREN, W. M., St. Louis, Mo. (Iowa Dist.)
WESTON, J. A., Lansing, Mich. (Indiana)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

Membership—WM. M. CRANE, New York, N. Y.
Apparatus Makers—D. J. COLLINS, Philadelphia, Pa.
Nomination—WM. M. CRANE, New York, N. Y.

Exhibition—W. GRIFFIN GRIBBEL, Philadelphia, Pa.
Trade Acceptances (Joint Com. with Acc. Sect.)—GEO. H. WARNER, New York, N. Y.

"Success waits upon ability and loyalty. Let's Go!" — Geo. B. Cortelyou



The Seal of

STANDARD PRODUCT AND ASSOCIATION SUPPORT

All company members, Manufacturers Section, are urged to use the above emblem on all stationery, catalogues and literature as company members of this Association.

Manufacturers Platform

To develop a higher standard of merchandise for the gas industry's service to the public.

To take active interest in the affairs of the Association in any way affecting our industry.

To the betterment of trade conditions in general, and the suppression of misleading advertising and unfair methods of competition.

To be of assistance to, and cooperate with the American Gas Association in building up its membership among gas companies, manufacturers and individuals engaged in the gas industry by utilizing its sales force as field representatives in the interest of the Association in all its work.

Manufacturers Section Conference

DECEMBER 18, 1919.

AT the Hotel Pennsylvania on December 18, 1919, Chairman Gribbel called a conference of the Managing Committee of the Manufacturers Section and all members serving on its various committees, to discuss the activities of the Section and outline plans for future work.

The meeting was attended by twenty-six manufacturers representing all manufacturing groups in the industry: W. Griffin Gribbel, H. D. Schall, George D. Roper, H. A. Norton, J. S. DeHart, Jr., A. P. Brill, Wm. M. Crane, I. W. Peffly, H. B. Lohmeyer, Howard Bruce, Richard Rees, W. W. Barnes, George W. Eccles, C. E. Bartlett, Frank A. Savage, George H. Warner, H. L. Read, W. H. Jefferson, C. H. French, S. Tully Willson, T. J. Potter, C. W. Wardell, C. C. Pennell, Eugene R. Geddes, Dr. Howard Lyon, P. H. Hall.

On trade acceptances as applying to public utility companies, Mr. G. H. Warner for the Committee stated that this form of payment has already been adopted by some manufacturers with pronounced success, and that the Committee would report its recommendations at an early date.

The Conference desired to go on record heartily supporting the continuation of the interrupted educational work for employees formerly instituted by the National Commercial Gas Association and the American Gas Institute, and recommended that its scope be extended to include all classes of gas company employees.

The campaign on Association membership will be in full swing before the next issue of the MONTHLY; the prospectus

for field workers will be ready for distribution and with the support of the delegates of company members who pledged the co-operation of their traveling representatives, interesting returns are looked forward to in the building up of the membership in all classes.

The subject of exhibitions at state or district association meetings, by manufacturer company members was discussed and the Secretary was instructed to canvass the membership by vote, to secure a definite decision on this subject. Member companies who have not as yet recorded their vote on the resolution sent them are requested to do so without delay in order that the Managing Committee can take any action made necessary by the vote cast.

Mr. Townsend Stites, Welsbach Company, Gloucester, N. J., was appointed on the Managing Committee.

Mr. C. H. B. Chapin will represent the Empire State Gas & Electric Association and Mr. C. H. Seidenglanz, the South Central Gas Association on the Managing Committee as affiliated representatives.

Record was made of the fact that the prizes offered by the Section for the two best papers on the benefits derived from the Exhibition, with constructive criticisms, were awarded to

W. A. Root, The Bronx Gas & Electric Co.,

First Prize—\$100 Liberty Bond.

W. F. O'Donnell, The United Gas Improvement Co.,

Second Prize—\$50 Liberty Bond.

These papers appeared in the January MONTHLY, pages 1 and 45.

SURFACE INDICATIONS

In glancing over the printed surface of the A. G. A. one catches glints of a set of the tide within the organization—a movement in a definite direction. This is as positive of ordered life within the Association as would be the wiggings of bacteria in the field of a microscope. The atoms are uniting to form molecules and the processes of life have started. Remember isolation does not produce life; the atoms must first join, incidentally, are you an atom or a molecule? The philosophy of this will soak through the rather murky metaphor if given time.

The arrows showing the direction of traffic in the commercial world still point to the buyer and from the seller. Although they seem fixed the possibility of a reversal is not altogether remote in the face of lessened and more costly production. But to continue, one discovers D. J. Collins and H. A. Norton moving to a place in the Managing Committee of the Technical Section: C. E. Bartlett, H. W. Hunter, F. H. Knapp, H. R. Maxon, and I. W. Peffly in the Managing Committee of the Commercial Section: A. P. Brill, D. J. Collins, (a very active ex-atom), and George D. Roper in the Managing Committee of the Advertising Section; and Richard Rees with the Accounting Section.

Couple with this the presence of manufacturers on the other committees of the Sections of the Association; also the fact that none but manufacturers are found in the Manufacturers Section, and a definite movement is clearly seen. The handwriting is on the wall. It is not, however, a prophecy of the atrophy of the Manufacturers Section. It is merely the old, old story; that manufacturers will radiate from themselves as a group whenever the opportunity presents and that these radiants will come to the

printed surface of the A. G. A. time and again in the form of interest, time, and thought in the problems presented in the Industry wherever they are being solved. Water will move to its level, and artificial hindrance, though prompted and supported by a worthy local ideal, does in effect bar the advent of stability and permanence.

The foregoing, it is hoped, will bring comfort to the minds of those who may be disturbed by a discrepancy between the volume of print activity allotted to the Manufacturers as a Section and that of the other Sections of the Association.

DAN M'GANN

Dan M'Gann Declares Himself

Said Dan M'Gann to a foreign man who worked at the self-same bench:

"Let me tell you this," and for emphasis he flourished a Stillson wrench.

"Don't talk to me of the bourgeois, don't open your mouth to speak

Of your socialists or your anarchists, don't mention the bolshevek,

For I've had enough of this foreign stuff, I'm sick as a man can be

Of the speech of hate, and I'm tellin' you straight that this is the land for me."

"If you want to brag, just take that flag, and boast of its field o' blue.

An' praise the dead an' the blood they shed for the peace o' the likes o' you.

I'll hear no more," and he waved once more, his wrench in a forceful way,

"O' the cunning creed o' some Russian breed, I stand for the U. S. A.

I'm done with your fads, and your wild-eyed lads, don't flourish your rag o' red

Where I can see or at night there'll be tall candles around your bed."

"So tip your hat to a flag like that. Thank God for its stripes an' stars,

Thank God you're here where the roads are clear, away from your kings and czars.

I can't just say what I feel today, for I'm not a talkin' man,

But first an' last, I'm standin' fast for all that's American.

So don't you speak of the bolshevek, it's sick of that stuff I am.

One God, one flag is the creed I brag. I'm boostin' for Uncle Sam."

EDGAR S. GUEST.

From *Byers Piper*.

TECHNICAL SECTION

L. R. DUTTON, Chairman

H. W. HARTMAN, Secretary

W. S. BLAUVELT, Vice-Chairman

MANAGING COMMITTEE — 1920

At Large

BLAUVELT, W. S., Detroit, Mich.
CASTOR, W. A., Philadelphia, Pa.
CHUBB, C. N., Davenport, Iowa.
COLLINS, D. J., (Mfr.) Philadelphia, Pa.
CONGDON, R. C., Atlanta, Ga.
DUTTON, L. R., Jenkintown, Pa.
EARNSHAW, E. H., Newark, N. J.
FIELDNER, A. C., Pittsburgh, Pa.
FORSTALL, WALTON, Philadelphia, Pa.
FULWEILER, W. H., Philadelphia, Pa.
HAFTENKAMP, J. P., Rochester, N. Y.
HAZELTINE, L. A., New York, N. Y.
HARPER, R. B., Chicago, Ill.
MACARTHUR, DONALD, Jersey City, N. J.
MACRETH, A. B., Los Angeles, Cal.
MACRETH, G. T., Mt. Vernon, N. Y.
NORTON, H. A., (Mfr.) Boston, Mass.
STONE, C. H., Rochester, N. Y.
UHLIG, E. C., Brooklyn, N. Y.
WEBER, F. C., New York, N. Y.
WILLIEN, L. J., Boston, Mass.

Representing Affiliated Societies

BROWN, J. A., Jackson, Mich. (Michigan)
CHAPIN, C. H. B., New York, N. Y. (Empire State
G. & E.)
CHUBB, C. N., Davenport, Ia. (Iowa)
CORNISH, R. C., Philadelphia, Pa. (Pennsylvania)
GREY, J. C., Fort Wayne, Ind. (Indiana)
HART, J. G., Waukegan, Ill. (Illinois)
HUMPHREYS, J. J., Montreal, Canada. (Canada)
JONES, E. C., San Francisco, Cal. (Pacific Coast)
JONES, JACOB B., Bridgeton, N. J. (New Jersey)
LYONS, B. F., Beloit, Wisc. (Wisconsin)
PAIGE, C. E., Worcester, Mass. (N. E. Gas. Eng.)
SEDBERRY, W. H., Marshall, Tex. (South Central)

CHAIRMEN OF SECTION COMMITTEES ORGANIZED TO DATE

By-Products—

Carbonization—J. P. HAFTENKAMP, Rochester, N. Y.
Cast Iron Pipe Standards—WALTON FORSTALL, Philadelphia, Pa.

Chemical—E. C. UHLIG, Brooklyn, N. Y.

Vice-Chairman, R. B. HARPER, Chicago, Ill.

Deposits in Meters, Services, etc. (Sub)—O. A. MOR-

HOUS, New York, N. Y.

Purification—C. H. STONE, Rochester, N. Y.

Consumers Meters—W. A. CASTOR, Philadelphia, Pa.

Vice-Chairman, GEO. WHERLE, Denver, Colo.

Re-Design of Distribution Systems—F. C. WEBER, New York, N. Y.

Disposal of Waste from Gas Plants—L. J. WILLIEN, Boston, Mass.

Electrolysis—L. A. HAZELTINE, New York, N. Y.

Gas Works Auxiliaries—C. N. CHUBB, Davenport, Ia.

Vice-Chairman, R. A. CARTER, Jr., New York, N. Y.

Refractory Materials—W. H. FULWEILER, Philadelphia, Pa.

Technical Committee Notes

OUR January MONTHLY reported in full the proceedings of the general sessions at the Technical Section conference held on December 5, but limited its account of the committee meetings to the matters which were incorporated in the "Manual of Committee Activities."

Other details of interest were considered at the meetings of the individual committees held during the conference, which are now brought to the attention of our members.

Committee on Disposal of Waste from Gas Plants

It was decided to continue the service

of this Committee to gas companies confronted with waste disposal problems but a slightly new plan is to be adopted. Instead of having members of the Committee visit individual plants, when requests for assistance are received, the Chairman of the Committee, Mr. L. J. Willien, will call a special meeting of the Committee. A representative of the company concerned will be invited to attend this meeting and submit all details of the particular problem.

Through the data at its disposal, the Committee has been able to render constructive assistance to several companies during the past year in the solution of their particular problems and it is hoped

that more companies will avail themselves of the service in the future.

So many requests have been received from operators interested in the disposal of ammonia wastes that the Committee has decided to publish the methods in use at The Koppers Company Laboratories for the testing of ammonia still waste and the estimation of phenol. This account appears on page 117 of the present issue.

As constituted to date the Committee on Disposal of Waste from Gas Plants is as follows:

- L. J. WILLIEN, *Chairman*, Chas. H. Tenney & Co., Boston, Mass.
- F. J. ANGELL, Humphreys & Glasgow, 38 Victoria St., London, S. W. England.
- R. B. BROWN, Milwaukee Gas Light Co., Milwaukee, Wisc.
- R. BUCKMINSTER, Pawtucket Gas Co., Pawtucket, R. I.
- E. L. DAVIES, Queensboro Gas & Electric Co., Far Rockaway, N. Y.
- ALLAN S. GRAHAM, Sioux Falls Gas Co., Sioux Falls, S. Dak.
- I. T. HADDOCK, Cambridge Gas Light Co., Cambridge, Mass.
- ARTHUR HEWITT, Consumers Gas Co., Toronto, Canada.
- A. C. HOWARD, The United Gas & Electric Engineering Corp., New York City.
- T. J. KELLY, Northern Indiana Gas & Electric Co., Fort Wayne, Ind.
- G. T. MACBETH, Westchester Lighting Co., Mt. Vernon, N. Y.
- JOHN W. SHAEFFER, Milwaukee Coke & Gas Co., Milwaukee, Wisc.
- F. W. SPERR, JR., The Koppers Co., Pittsburgh, Pa.
- C. C. TUTWILER, West Conshohocken, Pa.

Consumers Meters Committee

The Consumers Meters Committee has actively started the preparation of a report incorporating a full set of detailed instructions covering the proving, testing and handling of dry gas meters from their return to the shop from service until they are placed in condition to be set again. In addition, the Committee will endeavor

to cover certain phases of meter policy relating to the periodic changing of meters, transportation, oiling of meter valves, temperature of meters at the time of obtaining proofs, checking of index gearing, straight reading indices, etc.

The following suggestions as to changes in details of meter construction were discussed by the Committee.

"Extension of the top flange of the front gallery plate directly over the meter index in order to prevent hot solder from dropping into the index gears when putting on or taking off the top.

"Mounting the diaphragm carriage on a tin base having a narrow flange turned on each edge, the tin base to be soldered to the diaphragm disc instead of soldering the white metal diaphragm carriage to the disc as per present practice.

"To avoid notching out the front and back gallery plate flanges, in order to mount the long flag arms on their respective flag rods, changes in the design of the flag rods were suggested. If these could be arranged, the gallery plates would be strengthened and melted solder would have less opportunity to fall into the gallery of the meter, but it was not definitely determined that the proposition was feasible and in consequence developments will have to be awaited.

"Objection was raised to the use of light rocker wires inside of diaphragms in meters of 60-lights and larger. It was claimed that the leather has a tendency to crease and to break at each side of the wires and thus the life of the larger diaphragms is shortened. It was contended, on the other hand, that large diaphragms also tend to form into folds at the top portions and to break in these folds when no wires are used; that the top portions of large diaphragms, if too light, tend to fall over the front rings and become chafed or to collapse and fall between the front and back rings in a position where they are cut by the raw edges of the rings and produce a decided error in proof of the meters; so, after all, the light brass wire in question is the lesser of the two evils and preferable to the use of extra heavy leather, or to the stiffening up of the top portion of the diaphragms by means of seams or extra reinforcing patches. No agreement was reached and the question was left open for future discussion.

"Mr. J. A. Clark, Jr. suggested that the Chemical Committee—Sub-Committee on Dust and Sulphur Deposits in Meters, etc. be asked to investigate the effect of compressing the gas in reducing the damages to meter diaphragms and meter parts. The general opinion of the members of the Committee was that but very little trouble was experienced with meters supplied through high pressure systems. If this is true, it would appear that the condensation and water deposited in the drips in the vicinity of the compressor constitute the destructive elements which are permitted to enter and deposit themselves in meters passing manufactured gas that has not been subjected to high pressure.

"Messrs. Clark, Riechelderfer and Bartel will conduct investigations on a small scale to determine the effect on proof of meters resulting from the spraying of meter valves with light lubricating oil. The proof of several five-light ordinary meters will be obtained before spraying, after spraying and again after the meters have been in service one month, two months and three months.

"An investigation will be conducted by Messrs. Bartel, Riechelderfer and Drake to determine the maximum time required for cold meters to acquire the temperature of the room in which they are to be tested. A number of five-light ordinary meters will be allowed to acquire the prevailing outside temperature and then brought into the proving room. Each hour thereafter one meter will be connected to a five-foot prover and given an open column run and the temperature of the issuing air determined at the meter outlet. A different meter will be thus tested each hour until the temperature of the issuing air is found to correspond with the room temperature early in the run."

The Chairman invites all members interested in the testing and repairing of meters to submit their comments and suggestions on the Committee's work.

The personnel of the Consumers Meters Committee as here listed is believed by the Association to provide a most representative group for handling this subject.

The Chairman, Mr. W. A. Castor, has been a member of every Consumers Meters Committee of the A. G. I. and

A. G. A. and is well qualified to direct the activities of the Committee. Mr. Geo. Wehrle, Vice-Chairman, has had a wide experience in this field in his work for the Doherty organization and as Chairman of last year's Committee on Consumers Meters. Mr. Wehrle will represent the western section of the country in the Committee's work.

W. A. CASTOR, *Chairman*, The United Gas Improvement Co., Philadelphia, Pa.

GEO. WEHRLE, *Vice-Chairman*, Denver Gas & Electric Light Co., Denver, Colo.

GEO. R. ALTHEN, Consolidated Gas, Electric Light & Power Co., Baltimore, Md.

EMIL J. BARTEL, Brooklyn Union Gas Co., 62 12th St., Brooklyn, N. Y.

W. J. BERTKE, Sioux City Gas & Electric Co., Sioux City, Iowa.

JOHN A. CLARK, JR., Public Service Gas Co., Newark, N. J.

FRANCIS E. DRAKE, Lynn Gas & Electric Co., Lynn, Mass.

W. G. GRIBBEL, J. J. Griffin & Co., Pittsburgh, Pa.

GEO. A. LANE, Peoples Gas Light & Coke Co., Chicago, Ill.

G. A. NEAL, Northern Indiana Gas & Electric Co., Hammond, Ind.

W. F. NORTON, Manchester Traction, Light & Power Co., Nashua, N. H.

D. A. POWELL, Milwaukee Gas Light Co., Milwaukee, Wisc.

T. R. REICHELDERFER, Public Service Gas Co., Newark, N. J.

F. J. SCHAFER, Southern California Gas Co., Los Angeles, Cal.

Cast Iron Pipe Standards Committee

Attention is particularly called to additions to the standard for service sleeves approved by the Managing Committee, as contained in the report of the Cast Iron Pipe Standards Committee on page 117 of this issue. Members should promptly make the recommended changes in their copy of The Standard Specifications for Cast Iron Pipe and Special Castings so that it may be up to date.

Electrolysis Committee

It is hoped that all company members will carefully read the 1919 report of the

Electrolysis Committee which will be forwarded to them. It is the object of the Committee to impress all companies with the importance of electrolytic damage and to secure their cooperation in promptly reporting any data they have on electrolysis in their own systems.

Executive Committee

The following members of the Managing Committee have been appointed as an Executive Committee which will hold monthly meetings to act on matters arising in the interims between general conferences of the Section. The Committee will be pleased to have any member of the Association submit in writing matters which he would like to have discussed at the monthly meetings or suggestions that will be helpful in the committee program of the Section. The first Executive Committee meeting was held at Association headquarters, January 28, 1920 at 2:00 p. m.

- L. R. DUTTON, *Chairman*, Philadelphia Suburban Gas & Electric Co., Jenkintown, Pa.
- R. C. CORNISH, American Gas Co., West Washington Sq., Philadelphia, Pa.
- E. H. EARNSHAW, Public Service Gas Co., Newark, N. J.
- G. T. MACBETH, Westchester Lighting Co., Mt. Vernon, N. Y.
- F. C. WEBER, H. L. Doherty & Co., 60 Wall St., New York City.
- L. J. WILLIEN, Chas. H. Tenney & Co., 201 Devonshire St., Boston, Mass.

In all committee work this year it is planned to consider the needs of the smaller gas companies. For this purpose representatives of smaller companies have been appointed on certain committees and we would urge that managers and employees of small companies promptly inform chairmen of committees of any lines of work in their field on which they need data or desire special investigation by the committee. The Chemical and Disposal of Waste Committees are particularly organized to render service along these lines.

Cement Joint Practice

I THINK those gas engineers east of the Pacific Coast, who have been familiar with cement joint practice in the last twenty years were much surprised at certain statements in the paper entitled, "Making of Cement Joints for Cast Iron Pipe," read before the September meeting of the Pacific Coast Gas Association by W. M. Henderson, Assistant Engineer of the Gas Department, Pacific Gas & Electric Company.

These statements were as follows: "The practice, which is more or less general, of using neat cement for packing the joint, is not proper and will not give the satisfaction obtained from a mixture of Portland cement and sand. The best evidence of this is found in the characteristics of the material.

"Neat Portland cement in setting rises in temperature over a range from 60° F. to 150° F. in 12 hours, while a mixture of one part Portland cement and one part sand only rises in temperature during setting from 60° F. to possibly 70° F., or not in excess of 10° Fahrenheit degrees in 12 hours.

"This is ample reason for selecting a mixture, for it is natural to expect considerable expansion to accommodate the increase in temperature during setting of neat cement, which will likewise be followed by contraction. This fact accounts for the shrinkage cracks that have developed in joints made with neat cement.

"The best mixture for the joint is three parts cement to one part sand and just sufficient water to make a dough

that will hold its shape. The quantity of cement, sand and water should be mixed as necessary for each joint as it is made."

When I read this, I thought of Philadelphia's twenty-year record with cement joints in pipes 12 inches and smaller, which is as below:

Size of pipe	Feet laid	Total leaks
4"	157,072	80
6"	2,570,787	164
8"	75,780	20
12"	88,849	90

Other situations have done as well and therefore assuming for the present that cement and sand would be stronger than cement alone, why gild the lily?

Turning to larger pipe and again using Philadelphia's data for illustration we have this record as of Dec. 31, 1918, all of the mains having been laid prior to 1912.

Size of pipe	Feet laid	Total leaks
16"	44,334	312
20"	80,409	625
30"	38,685	851
36"	1,773	52

With this experience in mind I sent to the Portland Cement Association the statement of Mr. Henderson already quoted, spoke of the successful experience with neat cement and asked their opinion. In reply J. E. Freeman, Engineer of the Technical Bureau, wrote:

"Professor Abrams of the Structural Materials Research Laboratory to whom I mentioned this matter stated that the comments by Mr. Henderson with reference to the properties and behavior of cement were not borne out by tests in the laboratory, as they had made tests on most of the cements manufactured in the United States and some others, and have never found any instance in which the rise in temperature was anything like the values given. Neither does the undue expansion spoken of by Mr. Henderson occur. Professor Abrams has agreed with my ideas that the shrinkage cracks are due to an entirely different cause

than that which Mr. Henderson mentions. I quote the following from the data given me by Professor Abrams:

"These shrinkage cracks are due to an excess of water which is used in the mixture. Of course, unsound cement might show shrinkage cracks, but unsound cements are rarely encountered, and the unsoundness would be revealed by the standard test for this purpose.

"Whether a neat cement or a sand-mortar mixture should be used for pipe joints is largely a matter of cost and convenience in placing. It would seem that the neat cement joint offers many advantages. If proper care is used thoroughly to mix the cement with as small a quantity of water as possible, no trouble will be encountered from shrinkage, and a stronger and more watertight joint will be secured than if sand-mortar were used.

"The tendency of neat cement to shrink and crack on setting and hardening can be largely eliminated by mixing the mortar two or three hours before it is to be used. It would seem to be an unnecessary waste of time to mix the mortar separately for each joint, as recommended by Mr. Henderson.

"The use of neat cement for such purposes is well illustrated by some tests carried out in this laboratory on the strength of the attachment between porcelain insulators and the plugs which were set in neat cement. In this case the thickness of the cement joint was probably not more than 1/16-inch and any tendency to shrinkage would have served to break the contact immediately. With the very wet neat cement mixture which had formerly been used for this purpose, the manufacturers were satisfied if the insulators tested 600 lb. before the joint was broken. However, after using the stiffer cement mixture which we recommended, we found that the same insulators gave loads from 3,500 to 5,700 lb. and the insulator broke in every instance before the plug was pulled out."

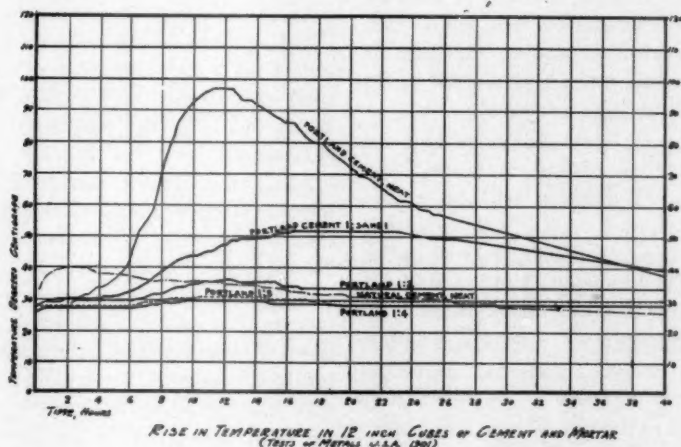
"I think that this is in line with your own experience in Philadelphia and also points out the reasons why Mr. Henderson did not secure the same results."

This correspondence was sent to Mr. Henderson and he replied in part as follows:

"Your letter taking issue with our practice of making cement joints was not

a great surprise. We have on previous occasions received the same criticism and carried on some discussion on this subject with Eastern engineers. Until you opened the subject up at this time, we have been carrying on somewhat under a truce. Apparently there is no settling of this argument as long as both of us appear to be getting such excellent satisfaction with our methods of making the cement joints. It seems strange that you should have to take issue with the

and experience has shown us that we can make a joint of any size and have made them up to 24 inches with standard bell and spigot pipe. Your own experience seems to indicate that with neat cement, 12 inch pipe is the limit of size. It is not my desire to push upon the rest of the profession, the methods that we use. But since my paper on cement joints gave this subject some publicity, it is just that I defend the statements you have taken issue with.



West on this subject, seeing that the practice we have adopted is the old New England method of over 40 years ago. If it gave such satisfaction in those days, it certainly is doing the same in New England to-day. The only reason why it has not been generally adopted is, possibly, because of the lack of publicity given this type of joint. New England gas engineers, I believe, had such faith in mixing the sand with cement for making joints and the practice was so general, that it was accepted without discussion or explanation, just like the practice of a Saturday night bath.

"The men in this organization as well as the engineers are thoroughly convinced that the type of joint we make is proper

"As far as Mr. Freeman's letter is concerned, his quotation of Professor Abrams, 'that they have never found any instance in which the rise in temperature was anything like the values given,' seems to mean that I apparently exaggerated when I stated that in setting, neat cement would rise over a range of temperature of 150 degrees Fahrenheit. The tracing shows the rise in temperature of setting for neat cement and various cement mortars. This was copied from Taylor & Thompson, 3rd edition, page 93 and is the result of tests made by U. S. Army Engineers. I do not think we need go back of such experimental work. You will observe that the temperature rise is over 95 de-

grees Centigrade, which is in excess of 200 degrees on the Fahrenheit scale.

"Mixing of the cement and sand for joints can be done in any quantity, previous to joint making. The addition of the water is only to be made as each joint is made up. This is in line with the best practice followed by masons and plasterers. You never knew them to allow a second set on cement work where the job was of any importance and so the practice is adopted by us. What little time it requires to add the little water that is used and mix it with the mortar before making the joint is time well spent and we are repaid in the quality of the joint produced.

"It is by an open discussion and the free circulation of our ideas that this much mooted question will be eventually settled, so I think it well to publish the substance of this letter as well as the exhibits that accompany it in the Monthly of the American Gas Association."

For small pipe, say, 12-inch and under, the factor of safety seems so large that most of the methods in use give good results, but as the size of pipe gets larger, the strongest cement joints are at times none too strong, and herein seems to lie the objection to mixing sand with cement when cement alone occasionally fails. The new deep bell just adopted by the American Gas Association for cement joints represents another effort to increase the total joint strength.

The Pacific Coast climate does not subject the pipe joints to the same strain

as do our eastern extremes of temperature, but this explanation does not apply to the New England experience quoted by Mr. Henderson. Can't we hear from that section?

Mr. G. I. Vincent has written me that the experiments made by the Committee on Cast Iron Pipe Joints showed among other things:

1st.—There is no radical change in temperature during setting, with neat cement as used in cast iron pipe joints.

2nd.—There is no measurable expansion or contraction during setting.

3rd.—There will be no surface cracks, unless an excess quantity of water is used, and all our specifications have insisted on using the minimum quantity of water.

4th.—Neat cement as used in cement joints is stronger both in bond and shear, than any mixture of cement and sand. No experiments were made to determine these figures as used in cement joints for mixtures of cement and sand, but we have the data universally used in reinforced concrete work, and you will note that the ultimate strength obtained for bond and shear in the Committee's experiments with neat cement, are higher by large amounts than these standard figures.

I believe that a thorough discussion of this subject would be of benefit to our distribution men especially. I would esteem it a great favor if any men who now use, or in the past have used, *cement and sand* would send me the following information.

PIPE LAID WITH CEMENT AND SAND JOINTS

Size of Pipe	Length of Line	When Laid	Leaking Joints	To date
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WALTON FORSTALL, Chairman

Cast Iron Pipe Standards Committee.

IMPORTANT

Additions to Standard for Service Sleeves

NOTE: In accordance with the following report of the Cast Iron Pipe Standards Committee, members are requested to add the figure "3" in the proper column of present page 37 of their Standard Specifications for Cast Iron Pipe and Special Castings, as recommended in the report and to note thereon the date of such revision.

"The Committee on Cast Iron Pipe Standards has approved additions to the standard for service sleeves as shown on printed pages 36 and 37 of the A. G. I. Specifications, as follows:

"Page 37 — lower table — in column "N" — 2nd and 3rd lines — add "3".

"The effect of this change is merely to provide for a 3-inch service sleeve tapped 3" and a 4-inch service sleeve tapped 3"."

WALTON FORSTALL,

Chairman, Committee on Cast Iron Pipe Standards.

The Determination of Phenols in Ammonia Still Waste

H. J. ROSE and F. W. SPERR, Jr.

INTRODUCTION:

THE objectionable quality of ammonia still waste from the standpoint of stream pollution is due to the presence of phenols. These substances, even at high dilution, impart to water a disagreeable taste which is intensified tenfold by chlorination. At dilutions where a disagreeable taste is just noticeable, the phenols are distinctly harmful to small fish.

It has been our experience that ordinary ammonia still waste may contain from one to two grams per liter of phenols—sometimes even more. Skirrow (*Jr. Soc. Chem. Ind.*, 1908, p. 58) has made an extensive investigation of phenols in ammonia liquor and we are

indebted to him for the development of an accurate method for the determination of these substances. His results in general agree with our experience. He finds that about two-thirds of the average phenol content of ammonia liquor consists of true phenol, C_6H_5OH ; the remainder consisting of cresols and other phenolic compounds of higher molecular weight.

The Koppers Company has for sometime been investigating the subject of ammonia still waste with a view to developing ways and means for its purification and satisfactory disposal. It is expected to publish some of the more important results of this investigation at an early date. An important phase of the

work has consisted in elaborating and standardizing methods for the analysis of still waste and of these methods, the most important has been the determination of phenols. Skirrow's method has been found very accurate and is especially valuable in exact analysis and in the determination of very small quantities. It is, however, too tedious for control work which is necessary in purification processes. We have, therefore, adopted Skirrow's method for all exact work and have developed a rapid method for control work. There is considerable interest in this subject at the present time and it has been thought advisable to publish these methods.

Exact Method

The method of Skirrow (*J. Soc. Chem. Ind.* 1908, page 58) is closely followed.

Pipette 100 cc. of still waste into a 250 cc. beaker and add $\frac{1}{2}$ cc. of yellow ammonium sulfide solution. Stir occasionally during a half hour period and then add a sufficient amount of a suspension of freshly precipitated lead carbonate to precipitate the sulfides. Stir frequently and filter with suction when all of the sulfides have been precipitated as Pb S.

Wash the residue once or twice and discard. To the filtrate add 25 cc. of a 50% solution of sodium hydroxide and a little broken porcelain and sand to prevent bumping, and evaporate carefully on a hot plate to about 50 cc. volume.

Using as little water as possible, transfer to a 1 liter fractionating flask, with side tube bent to deliver into a vertical Liebig condenser. Cool the flask in ice water and cautiously add 1:3 sulfuric acid solution until the solution is distinctly acid to litmus paper. The total volume of the acid solution should be about 150 cc. Connect the flask with the condenser and distil into a 250 cc.

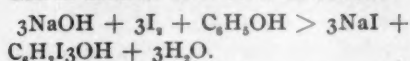
Erlenmeyer flask. The delivery tube should dip into a few cc. of water contained in the flask. Continue the distillation until salts crystallize out in the distilling flask. (Note—Danger of breakage will be lessened if the flask rests on an asbestos card with a two inch opening). Allow the flask to cool somewhat, add 100 cc. of water, and distil again into a second receiving flask until salts crystallize out. Repeat a third time.

The three distillates will now contain all of the phenols, together with SO_2 , organic acids, traces of H_2S , etc. Add a few cc. of a suspension of freshly precipitated calcium carbonate and a little lead carbonate suspension to each distillate. Shake frequently during a half hour, then redistil from a clean flask, distilling the first solution nearly to dryness before adding the second, and doing likewise with the second before adding the third. Make up the total distillate to 500 cc. and mix thoroughly. Pipette 50 cc. of this solution into a 750 cc. Erlenmeyer flask, add 3 cc. N/1 NaOH from a burette, warm to 60° on a hot plate, add sufficient N/10 iodine solution from a burette to give a permanent brown coloration and stopper. Shake vigorously and frequently until cold (half hour). Slightly acidify the solution, add freshly prepared starch indicator and titrate with N/10 sodium thiosulfate to the disappearance of the blue color, and appearance of a bright rose pink. If much phenol is present, a flocculent rose pink precipitate of triiodo-phenol will be evident.

If a 100 cc. sample of still waste was originally used, and 50 cc. of the total 500 cc. final distillate taken for titration, the calculation of results is as follows:
(cc. N/10 Iodine \times factor — cc. N/10 Thiosulfate \times factor) $\times 0.001568 \times 100$
 $= \text{G. P. L. Phenols as } \text{C}_6\text{H}_5\text{OH}.$

The results given by this method are not satisfactory unless the ratio of NaOH to phenols is very carefully controlled. Four molecules of NaOH should be present for each one of phenols, or in terms of standard solutions, 42.5 cc. of N/1 NaOH should be used for each gram of phenols. Using the phenols figure first obtained, compute the proper amount of N/1 NaOH to add, and make a second titration to obtain a more accurate figure.

The equation for the iodine substitution in alkaline solution is as follows:



Preparation of CaCO_3 and PbCO_3 Suspension

Precipitate PbCO_3 by adding a solution of $\text{Pb}(\text{NO}_3)_2$ to a moderate excess of Na_2CO_3 solution. Wash thoroughly by decantation in a hot solution.

Prepare CaCO_3 by adding filtered CaCl_2 solution to an equivalent amount of Na_2CO_3 solution. Wash by decantation.

NOTE: To determine the loss of phenol during analysis, two portions of distilled water containing 0.0006 gm. each of phenol (determined by iodine titration) were carried through the method from the point reading—"To the filtrate add 25 cc. of a 50% solution of sodium hydroxide, etc." with an average loss of 0.0029 gm. phenol, or a recovery of 95.2%.

A second analyst working independently added 0.1069 gm. of phenol to each of two portions of typical ammonia still waste of known phenol content, and carried the mixtures through the entire method with an average loss of 0.0025 gm. phenol, or a recovery of 97.7%.

Rapid Approximate Method

Stock Phenol Solution (1 part per 1,000)

Weigh out rapidly 1,000 grams of dry, crystalline, C. P. phenol and dissolve in 1 liter of distilled water.

Dilute Phenol Solution (1 part per 10,000)

Dilute 100 cc. of the stock phenol solution to 1,000 cc. with distilled water.

Dilute Bromine Water

Dilute saturated bromine water with four times its volume of distilled water.

Comparison Tubes

Select six 3/4 in. by 6 in. test tubes of clear glass and of as nearly the same size bore as possible, and graduate at 5 cc. intervals with a file scratch or wax pencil mark.

Procedure:

Filter the sample to be analyzed unless it is absolutely clear, and to about 10 cc. in a test tube add dilute bromine water drop by drop, constantly shaking the test tube, until a slight permanent yellowish tint is observable when the test tube is held over a white surface and the solution is viewed from the top.

If an immediate and heavy white precipitate forms, phenols are present in a concentration greater than 1 part in 10,000. If not even a faint crystalline precipitate is visible after five minutes, when the solution to be tested, dilute a known face, phenols are not present in the proportion of 1 part in 50,000.

To estimate the amount of phenols in the solution to be tested, dilute a known amount of solution in a graduated cylinder, with distilled water, until the diluted solution will give a test ranging from a slight opalescence or milkiness, to a faint crystalline precipitate. This diluted solution is then ready for comparison with standards prepared as follows:

In each of five graduated test tubes place 5 cc. of the dilute phenol solution (1 part in 10,000) and place in a rack. To the second test tube add 5 cc. of water, to the third 10 cc., the fourth 15 cc. and the fifth 20 cc. The test tubes will then contain solutions of 1/10,000, 1/20,000, 1/30,000, 1/40,000, 1/50,000 of phenol, respectively.

Take a convenient quantity of the diluted sample in a test tube, and to all six test tubes quickly add a very slight

excess of dilute bromine water as directed above. Compare the amount of cloudiness or precipitate (*not* the color) of the sample with the standards. It will be found very simple to select the proper standard. Having found the phenols content of the diluted solution, calculate back to the original solution.

For Example:—An original sample was diluted to 15 times its volume and this diluted solution was found to match closely the 1/30,000 phenol standard. The original solution must have been 15 times as strong or 15/30,000, which is 1 part in 2000. It is convenient to consider the concentration in parts per million.

NOTES: It is important to compare the sample and standards immediately after adding the bromine water, as the appearance of the precipitates in distilled water and still waste varies considerably upon standing.

For this reason it is preferable to use as a standard, ammonia still waste, the phenols content of which has been determined by the method of Skirrow, and has then been diluted to obtain a 1/10,000 concentration of phenols.

The precipitation is not complete until there is a slight excess of bromine. However, the precipitate of tribromophenol readily dissolves in a *large* excess of bromine water.

Ordinary ammonia still waste requires a dilution of 10 to 40 times before comparison.

Results of tests made with a C. P. phenol solution in distilled water are as follows:—

Concentration	Result
1 : 20,000	Immediate milkiness.
1 : 30,000	Heavy crystalline precipitate in a few seconds.
1 : 40,000	Sparing crystalline precipitate definite in less than 1 min., marked in 5 min.
1 : 50,000	Faint but definite crystalline precipitate after several minutes.
1 : 60,000	No positive results after 1 hour.

THE KOPPERS COMPANY LABORATORIES,
MELLON INSTITUTE,
PITTSBURGH, PA.

RECENT ARTICLES IN CHEMICAL PRESS OF INTEREST TO GAS MEN

Contributed by Sub-Committee on Abstracts* of the Chemical Committee

BY-PRODUCT TAR AS OPEN-HEARTH FURNACE FUEL. (From *Industrial Bulletin*, Colorado Fuel and Iron Co.), by Frank Ferguson, *Chemical and Met. Eng.*, Vol. 21, No. 12, 610 (Nov. 12, 1919). Experiences using tar instead of producer gas at Minnequa plant of the Colorado Fuel and Iron Co. "From an economical standpoint, the comparison of one tar furnace and one gas furnace shows that the advantage is slightly in favor of the tar furnace. The main advantage of tar is in using it on the furnaces every week when the gas sewers are burned out, thereby keeping it in operation instead of shutting down for 12 hours once a week; also in using it on a furnace that it is impossible to run with gas." (David L. Jacobson.)

OPERATION OF A GAS PRODUCER. By J. S. McClimon, *Chemical and Met. Eng.*, Vol. 21, No. 12, 633-635 (Nov. 12, 1919). Practical points on the operation of gas producers. Starting the producer, measuring fires, temperature of gas leaving producer, cleaning fires, steam requirements, cooling water, etc., are treated from the operator's point of view. (David L. Jacobson.)

GAS COMBUSTION CHART. (From *Le Génie Civil*, Aug. 16, 1919, pg. 152-154) by M. Grebel, *Chemical and Met. Eng.*, Vol. 21, No. 12, 641 (Nov. 12, 1919). The influence of the burner on the efficiency of industrial heating by gas. By means of a chart, one can determine from an analysis of the gases of combustion, the proportion of air supplied to air necessary for perfect combustion. This is applied to city gas, blast furnace gas, water gas, oil, etc. (David L. Jacobson.)

* Abstractors' names appear in brackets following each item.

APPLICATION OF THE INTERFEROMETER TO GAS ANALYSIS. By J. D. Edwards, *Chemical and Met. Eng.*, Vol. 21, No. 11, 560-565 (Oct. 29, 1919). The gas interferometer is essentially a differential refractometer and measures the difference in refractivity of two samples of gas. It can be used only for a mixture of two gases or their equivalent, mixtures of constant composition, such as air, for example, may be regarded as a single component. The readings are a function of the temperature and pressure and calibration curves should be drawn so that the correct reading can be obtained by interpolation.

The effect produced upon the observations by variations in gas composition and experimental conditions, is analyzed in the article, and equations developed by which the magnitude of such changes can be estimated. Typical cases in which the interferometer can be employed, such as for the analysis of mixtures containing helium, analysis of flue gas, carbon dioxide—air mixtures, etc. are given, together with points on sources of error, details of operation, and the relative sensitivity of the interferometer for different gases. (David L. Jacobson.)

GRAPHICAL REPRESENTATION OF THE COMPOSITION AND PROPERTIES OF FUEL. (From *Technische Rundschau*, Berlin, Aug. 6, 1919), by Dr. K. Schreiber, *Chemical and Met. Eng.*, Vol. 21, No. 11, 578-579 (Oct. 29, 1919). Real fuel is considered as consisting of carbon, hydrogen and oxygen only; the ash and moisture being non-essential constituents. The percentage composition of the real fuel is calculated and graphically plotted on a tri-angular diagram such as is used in chemical and metallurgical investigations. Similarly, by dividing the weight percentages by the respective atomic weights, the atomic percentage composition can be plotted.

Sixteen different fuels are plotted both by weight percentage composition and atomic percentage composition. The atomic percentage composition brings the fuels of similar properties into the same locality on the diagram in a better way than the weight percentage composition. (David L. Jacobson.)

BY-PRODUCT COKE OVEN OPERATIONS. *Chemical and Met. Eng.*, Vol. 21, No. 13, 689 (Dec. 3, 1919). Reference is made to figures compiled by the War Department comparing the operation of by-product coke oven plants in 1917 with operation in 1918. The percentage of capacity realized in production in 1917 averaged 88%, in 1918 averaged 86.9%. In 1917, nine plants realized 100% production, five of them being Koppers plants. In 1918, no plant realized 100% production. In 1918, the per cent. of capacity lost on account of no coal was 5.1%; in 1917, it was 18.75%. (David L. Jacobson.)

CONTINUOUS RECTIFICATION OF CRUDE BENZOL. (From *Chimie et Industrie*, Sept., 1919), by A. Baril, *Chemical and Met. Eng.*, Vol. 21, No. 13, 692 (Nov. 26, 1919). Description of the Gennevilliers gas works plant for continuous rectification of crude benzol. The apparatus employed consists of three columns, each provided with its own heating arrangement. The liquid passes continuously through the three columns, in series, and three separate fractions are collected consisting of fore-runings, pure benzene and pure toluene. Residual solvent naphtha is drawn off from the bottom of the third column. (David L. Jacobson.)

AN IMPROVED ORSAT APPARATUS FOR GAS ANALYSIS. By G. W. Jones and F. R. Neumeister, *Chemical and Met. Eng.*, Vol. 21, No. 14, 734-736 (Dec. 10, 1919). Description of the apparatus now used by the Bureau of Mines. The original Orsat apparatus is used, modified by Jager's copper oxide method for removing hydrogen and carbon monoxide. A compensation of Peterssen type, modified by Gregg is included.

Careful directions are given for carrying out the analysis, especially for using the copper oxide tube and making the combustion. The procedure outlined is for gases containing carbon dioxide, unsaturated hydrocarbons, oxygen, nitrogen, carbon monoxide, hydrogen, methane and ethane. A complete diagram of electrical connections, description of an adjustable mercury bulb support, and construction of the copper oxide tube heater, are included. (David L. Jacobson.)

Employment Bureau

SERVICES REQUIRED

SALESMAN—A man who can push sales of new appliances and also work for increased sales per meter where appliances are already installed. Apply to Chas. Otten, Jr., Manager, Plymouth Gas Light Company, Plymouth, Mass.

Key No. 3

WATER GAS—Experienced water gas maker wanted. Gas Works vicinity of New York. Address—American Gas Association, 130 East Fifteenth Street, New York, N. Y.

Key No. 4

METERS: METER REPAIRER—One who is experienced in meter work. Works in large city in New York. Address reply to A. G. A.

Key No. 5

SERVICES OFFERED

WANTED—Position as manager in city of 60,000 or over by college graduate of 16 years connection with gas business. A successful record as manager of 2 gas companies and as superintendent of one of largest gas plants in U. S. Has had practical experience in every branch of the business and has made good. Address American Gas Association.

Key No. 102

WANTED—Position as gas engineer or manager by a man of large experience in both capacities in manufacture and distribution of coal or water gas. 38 years of age with excellent references. Address—American Gas Association, 130 East 15th Street.

Key No. 103

WANTED—Young man desires a position with opportunities. Present location 5 years and cannot go higher. Thoroughly trained and experienced in water gas operation. New business and management. Address—American Gas Association.

Key No. 104

WANTED—Position as superintendent of a company of moderate size, age 29. Technical graduate—experience—assistant superintendent of large coal and water gas plant. Distribution and industrial appliance work. Address American Gas Association.

Key No. 105

WANTED—Young man 32, experienced manager and office manager desires position with a combination company. Salary \$250.00 per month. Address—American Gas Association.

Key No. 106

WANTED—Position as general manager of a large company or of several companies where organization and management is necessary. Have had an extensive experience in the business in all its branches as an organizer, builder and manager. Have had excellent results in dealing with the public and in popularizing the companies under my direction. Address—American Gas Association.

Key No. 107

WANTED—Position as superintendent wanted by technical man, married, 30 years of age, experienced in manufacture of water gas and high and low pressure distribution. Can furnish best of references. Address—American Gas Association, 130 East Fifteenth St., New York, N. Y.

Key No. 108

"THE RIGHT TRACK"

The Metal Worker, Plumber and Steam Fitter, in its issue of October 31, 1919, reprints the article by Mr. William T. Rasch of the Consolidated Gas Co. of N. Y. and member of the A. G. A. Industrial Fuel Committee, which appeared in the *Gas Age*, October 1, 1919, on "Househeating by Gas," with the following foreword:

"How many times have you been asked by a customer, 'Is there any way that I can use gas for heating my home? It would be so much cleaner and convenient but is it economical?'"

"Did it stump you? Why?—because you had no dope, no basis to figure from. Here is something that will put the practical heating man on the right track."

Great Possibilities in Gas Burning Devices

EDITOR'S NOTE: This article is reprinted from the New York Herald's U. S. Marine Supplement of November 12, 1919. A number of the manufacturer companies of the A. G. A. who exhibited at Hotel Pennsylvania have requested copies and it is believed that much good can come from calling wide spread attention of gas companies to a type of news article for which there is a consistent demand among newspapers and magazines. The article, with the help of practical gas men who pointed out the newest elements in gas appliances, was prepared primarily to call attention to the manufacturers' exhibit at the Convention. *The Herald* in compiling its 160 page supplement devoted to commercial developments—"A Resumé of the Past—A Forecast of the Future"—selected the title that appears herewith and devoted an entire page to this account.

The article has not been copyrighted and we suggest that you call the attention of your local editor to this material which can be used in part or in its entirety as copy of great interest in the household or magazine section of his paper.

WHAT would a child's life be without a new toy every now and then? But not only the child loves the new thing to play with, to try out and to exhibit to his friends. Both mother and father have kept enough of that childish instinct to enjoy a new device at almost any cost. Father has gone farthest, perhaps, in buying for himself the tools and typewriters and time clock recorders that offer him something different from what he had before, because he knows they usually pay, but mother, too, is more alive than ever to the fact that new things are often real helps in her work, as well as real joys in her household.

Since mother has had to do her work alone, or almost alone, she has begun to think it no indulgence, but the supplying of a real need, a part of efficient management, to gather together those devices, large and small, which lighten her burden and make her workroom more cheerful.

The display at Hotel Pennsylvania recently of gas-burning appliances of all kinds was not particularly planned to show women how much has been developed for their benefit, but any woman just happening to wonder through the flower and fern trimmed booths on the ball room floor where the American Gas Association has been holding its convention and exhibition would have been delighted at some of the new things waiting for her. As one lady said, "I felt I must keep both eyes open or my kitchen equipment and other rooms would be way out of style and behind the times—like heating water by putting a hot stone into it. I didn't realize how many new things to help out they make every year."

The Modern Gas Range

Perhaps the biggest single piece of "machinery" a woman has in her home is her kitchen stove. And how a housewife does enjoy one that is clean and quick and sure—always on the job and good to look at. Enamel gas ranges have been in use for several years, but now they make them blue or white or gray to suit your taste, and they show you how a new enamel has been made that's less likely than ever to come off or crack. Given smooth corners, fewer joints, enamel from top to bottom, even the burner top, and a damp cloth will keep one of these aristocrats among stoves shining all of the time. Nickel trimmings, too, are to kitchen decoration what upholstery is in the parlor.

Some one has certainly been thinking about our cooking problems, for there are not only handsome ranges but ranges that offer greater conveniences, special

safety devices, more heat for less gas and less attention for more cooking done.

The top burner lighter is a friend of the busy cook, and it saves matches. Press a button and the tiny flames flash out to light any burner turned on. Manufacturers consider these so helpful that many of them are putting the lighters on all of their ranges, and an old stove can be equipped with one at a cost of \$1.50. And now you can get a lighter all ready to ignite the gas in the oven burners, too.

Then there is a very attractive new top to take the place of the iron grids that usually cover the top burners. They call it a "clean top" because it is all enamel. Star shaped holes are cut above the burners and the part of the enamel sheet around the burner slopes slightly downward so that any water or grease that may spill will flow, not on the burner, but down to the enamel drip pan. Hence the top of the range is always clean and, being a solid enamel sheet, except for the star shaped openings, it also stays hot after the gas has been turned off.

You don't have to build or plan your kitchen now to fit your stove. There is a gas range for a kitchen, a family or a purse of every size—studio ranges that fit in between the camouflaged bathtub and the davenport, and cabinet ranges for a family that shelters all of its "in-laws." There are single ovens with broiling burners in the top and baking burners in the bottom, where a special safety device won't let you turn on more than one set at a time. Gas needs air to burn, and if you try to burn too much gas in a small enclosed oven, an accident might happen.

Larger stoves have the baking and broiling ovens separate, and still larger ones add, below the top burner section, a

boiling oven that is ideal for such foods as cabbage—plain or "liberty." No odor in the kitchen, let alone in parlor and front hall. The warming oven, too, can be had on both small and large ranges.

Every real housewife now knows that broiling is by far the best way to prepare steaks and chops and delicious fish. But why wait for the festive downtown dinner to enjoy these? The gas man offers a broiler placed above an enamel pan in a rack that is controlled by a lever on the outside of the stove. Lifting or lowering the lever makes it possible to bring the meat to within a fraction of an inch of the flame for quick broiling, or to lower it for slow, well-done cooking. A second model has a double broiling grill, like an old-fashioned toaster. Put the steak in place, fasten the small catch, and every ten or fifteen counts, turn the meat over by a slight twist of the wrist, without removing it from the grill at all. That is the way to get a perfect steak, according to *Good Housekeeping*.

Guess work in baking is a thing of the past—or should be. Every oven should have at least a thermometer to show how hot it is. Better still is a device which will keep the oven for minutes or for hours at any temperature you say. How it is done is for the learned gas engineer to tell. The housewife puts her dinner in the oven, turns a small wheel at its side to "slow," "medium," "fast," or to a special number of degrees and forgets her kitchen duties until the dinner is cooked. The little device takes care that only enough gas is burned to keep the oven at the proper temperature. To help her out at first, the new user of this range gets a little book that tells just how hot the oven should be for each dish and how long it should cook. In place of a fireless cooker for which the stones must first be heated while the food is brought to a boiling or super-boiling

point and then the stones and pots are removed from the fire and fitted into the cooker, one can put a steak into the oven, heat it up, set the device for slow cooking and let it take care of itself. In other words, in most cases it isn't how long you cook the food, but how much heat you put into it, that does the job.

The next thing will probably be a light in the oven. A big baker's oven where the bread is carried around and around on a set of revolving shelves, has a light inside it. This is the kind of oven that the daylight bakeries use, that are proving very fascinating to their women customers.

Toast may be toast, or it may be shoe leather. There is a small round toaster to put over a range burner, and that it makes delicious toast is proved by the young lady who offers you a taste. And this toaster can be folded flat to be put away, between meals.

Gas Heated Water

A family of three or four uses from fifty to seventy-five gallons of hot water a day. Not one but many geniuses have been on the job to supply us with hot water, and they're putting the kitchen hot water heaters into good looking enamel jackets. One firm points out a new arrangement of the burners on a big automatic heater, so that any "dew" which forms on the copper pipes cannot possibly fall back on the burners. Another shows a special tank with the heater under it, so that it takes up no extra room. An automatic valve which the gas man sets for you keeps the gas burning just enough so that the water in the tank is always as hot as you want it—usually about 140 degrees Fahrenheit—a little too hot for dish washing. This means no care, no lighting or turning out of the gas and hot water always in the asbestos covered tank. The small lighter that always burns is so protected

that if it should by an unusual accident go out, the gas would shut itself off entirely in thirty seconds.

Still more interesting is a new plan to heat water and cook at the same time on a gas or oil stove. This device will fit your own range, with only two pipe connections to your boiler. A top that looks like the top of a coal stove with removable lids is fitted over the gas range. A circle of iron pipe placed around the gas burner is the special feature. Two burners are so fitted and the water is made to flow through these circles into the tank. Thus, they say, all of the heat is used, part to stew the beef in the kettle over the burner and the rest to heat the water in the circle. That's getting back to the "water back" of the coal range, and the man who worked it out can tell you just how much you save. The top costs \$15, with two burners ("circles"), and you can heat enough water for a bath in twenty minutes. Furthermore, the solid top tends to save heat.

A woman visitor to this exhibition saw other things of great interest, too—a special very small mantle burner called the Thrift Light—for use in hallways and places where only a dim light is needed. Where bright illumination is wanted, three or four Thrift Lights give all that is desired and their soft, restful glow is very pleasing. The Thrift Light costs very little, and it burns about one-seventh or one-eighth cent's worth of gas in an hour. Hence it is no extravagance to use a number at one time. Inverted mantle gas lights, too, can be had in semi-indirect bowls of most beautiful art glass.

The Gas Iron

Have you watched the gas iron develop? One hundred thousand women—in Manhattan and the Bronx—use one style, while 200,000 in Chicago bought

another style in one year. One exhibitor proudly shows how the hose he offers is as flexible as an electric cord and the connection with the iron is made by inserting a small metal tube into a special larger tube on the iron, when a device locks it in place. No slipping, no twisting. Remove it by pressing a disk and pulling it out, while the iron is hot, if you choose. This iron has a double point and a regulating valve, so that it can be kept at 500 degrees (more or less, to suit your work). The second style also has the regulating device and a spring in the handle that prevents blisters—a shock absorber, like automobile tires or rubber heels. It has won the approval of laundresses. It also has a removable weight so that light or heavy ironing can be done with the one iron. Can these things be the thoughtfulness of men or did a woman suggest them? Here, too, was a gold plated iron—not so much for wear as for show—but for forty dollars you could get one for a Christmas gift for that maid you'd like to keep!

House Heaters \$2.50 to \$75.00

Coal's up skyhigh. At least, too few janitors have it in the basement. But everywhere there were special room heaters. "You pays your money and takes your choice" evidently from \$2.50 to \$75. There were imitation coal fires in fireplace grates where the red glow looked so comfortable; special chalk white rods that got red hot and sent all their heat toward the floor and your shivering person without delay; beautiful nickel, copper, bronze and black frames holding those radiant bars, so that each heater was a beauty, and special finishes were applied to prevent any damage by the heat; specially guarded fronts and backs, so that the heater can be set against the wall or

near a bed with no danger of fire; heaters that give heat from both sides, and all of them odorless. Some of them heated the air and sent it into the room; some sent their heat direct to you, as the sun does; some heat water or make steam, and these can now be connected to a central hot water or steam heating plant for use during the winter, with the gas waiting for any moment when the furnace fire dies down and out.

Or you can buy coke briquettes, made by the adding of some oil to the dust left in coke bins. These egg shaped lumps of fuel burn to a fine ash—no clinkers—and because of the oil give more heat than coal and at a smaller price.

The "Mystery" of the Meter

What woman hasn't wondered what happens inside her gas meter? At this exhibit she could have seen a meter four feet tall (they actually use two of this size at the Hotel Pennsylvania), with its top and front removed to show the works. A bellows like the blacksmith's of leather, called the "drum," several levers and gears and a little device that keeps the wheels from going backwards. That's what makes the "click" one hears. The chief wear is on the drum, which expands and contracts as the gas fills it and is forced out, and, since leather stretches rather than shrinks, too much gas rather than too little is likely to fill the drum for each turn on the disk.

The whole exhibit represents over one hundred firms that manufacture gas burning appliances, or machinery for the gas men's use, and the housewife could tell by one visit through the ballroom of the Hotel Pennsylvania that here is one industry that still spends time and money to satisfy her needs and makes a big effort to please her.

New Members Enrolled in the American Gas Association, Inc. December 10, 1919—January 9, 1920, Inc.

GAS COMPANY MEMBERS

The Tuscon Gas, Elec. Lt. & Pr. Co.	FRANK E. RUSSELL, Tuscon, Ariz.
Helena Gas & Elec. Co.	JOHN GRIBBELL, Helena, Ark.
New Jersey Northern Gas Co.	JOHN A. RIGGIN, Camden, N. J.
Albuquerque Gas & Elec. Co.	ARTHUR PRAGER, Albuquerque, N. M.
Long Island Lighting Co.	E. L. PHILLIPS, New York, N. Y.

MANUFACTURERS

Phillips, Lang & Co.	GEORGE W. PHILLIPS, Chicago, Ill.
Walker & Pratt Mfg. Co.	R. D. WALKER, Boston, Mass.

Active Members

MARYLAND

Bartlett Hayward Co., Baltimore
 Paul M. Kuehn
 Consolidated Gas, El. Lt. & Pr. Co., Baltimore
 J. H. Geiger
 Minor C. K. Jones
 Chas. C. Krausse
 Eugene D. Milener

MASSACHUSETTS

Roberts & Mander Stove Co., Boston
 Matthew J. Ryan

MICHIGAN

The Detroit Edison Co., Port Huron
 Lothrop Dow
 D. W. Hayes
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NEW JERSEY

Public Service Gas Co., East Orange
 James W. Fowler
 International Coal Products Co., Newark
 H. B. Bettinger

NEW YORK

Brooklyn Union Gas Co., Brooklyn
 Edward H. Marsh
 Lockport Light, Heat & Power Co., Lockport
 J. A. Perkins

American Gas Ass'n. Inc., New York
 Percy H. Hall
 Consolidated Gas Co. of N. Y., New York
 O. A. Morhous
 Henry L. Doherty & Co., New York
 George Williams
 Northern Union Gas Co., New York
 George McCormick

PENNSYLVANIA

Philadelphia Sub. Gas & Elec. Co., Chester
 Anson A. Avery
 Harry C. Brockhoff
 James C. Knowles
 The Koppers Co. Pittsburgh
 O. O. Malleis
 Harold J. Rose

TEXAS

Ruud-Humphrey Water Heater Co., Dallas
 C. H. Seidenglanz

WISCONSIN

Milwaukee Gas Light Co., Milwaukee
 Fred W. Hammett
 Albert A. Schutz

CANADA

The Gurney Foundry Co. Ltd., Toronto
 W. R. Gibson

Why and How Coke Should be Used for Domestic Heating

This is the title of Technical Paper No. 242, Bureau of Mines by Henry Kreisinger and A. C. Fieldner, and states the conclusions reached by the Bureau in its investigation of more efficient methods of utilizing the fuel resources of the country. It emphasizes the advantages to be derived by the general use of smokeless fuels—coke and gas—and the conservation possible because of the recovery of the by-products obtained in the coking process.

The paper contains some interesting comments on the convenience and efficiency of gas as a fuel. Copies may be had on application addressed to the Director of the Bureau of Mines, Washington, D. C. Both number and title of the paper should be stated in the request.

Associations Affiliated with A. G. A.

Canadian Gas Association

Pres.—V. S. McIntyre, Kitchener, Ont.
V.-Pres.—C. S. Bagg, Montreal, Que.
E. H. Caughell, St. Thomas, Ont.
Sec.-Tr.—G. W. Allen, 19 Toronto St.,
Toronto, Can.

Conv., 1920.

Empire State Gas & Electric Association

Pres.—Horace L. Mann, Buffalo, N. Y.
V.-Pres.—H. W. Peck,
C. G. M. Thomas.
Treas.—E. H. Rosenquest.
Sec.—C. H. B. Chapin, 29 W. 39th St., New
York, N. Y.

Illinois Gas Association

Pres.—H. S. Whipple, Rockford, Ill.
V.-Pres.—W. M. Willett.
Sec.-Tr.—H. H. Clark, 72 W. Adams St.,
Chicago, Ill.
R. V. Prather, 305 DeWitt Smith
Bldg., Springfield, Ill.
Conv., 1920, March 17-18, Hotel Sherman,
Chicago, Ill.

Indiana Gas Association

Pres.—R. A. Ziegler, Anderson, Ind.
V.-Pres.—J. D. Forrest.
Sec.-Tr.—E. J. Burke, Citizens Gas Co.,
Indianapolis, Ind.
Conv., 1920, April 28.

Iowa District Gas Association

Pres.—Geo. D. Roper, Rockford, Ill.
V.-Pres.—W. H. Taylor,
C. N. Chubb.
Sec. Tr.—H. R. Sterrett, Des Moines Gas Co.,
Des Moines, Ia.
Conv., 1920.

Michigan Gas Association

Pres.—E. C. Campbell, Benton Harbor, Mich.
V.-Pres.—J. W. Batten, Detroit, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas
Light Co., Grand Rapids, Mich.
Conv., 1920.

New England Association of Gas Engineers

Pres.—A. M. Barnes, Cambridge, Mass.
V.-Pres.—W. F. Norton,
Burton Smart.
Sec.-Tr.—N. W. Gifford, 38 Central Sq.,
East Boston, Mass.
Conv., 1920, Feb. 18-19—Boston, Mass.

New England Gas Sales Association

Gov.—William Gould, Boston, Mass.
Sec.—John B. Anderson, 46 Center St., Brock-
ton, Mass.
Treas.—W. T. Pease, Boston, Mass.

New Jersey State Gas Association

Pres.—C. W. Hoy, Glassboro, N. J.
V.-Pres.—R. H. Garrison.
Sec.-Tr.—Wm. P. Adams, Millville, N. J.
Conv., 1920.

Pacific Coast Gas Association

Pres.—A. B. Day, Los Angeles, Calif.
V.-Pres.—L. B. Jones, San Francisco, Calif.
Sec.-Tr.—Henry Bostwick, 445 Sutter St., San
Francisco, Calif.
Conv., 1920.

Pennsylvania Gas Association

Pres.—G. F. Speaker, Lebanon, Pa.
V.-Pres.—O. H. Heckert,
J. L. Mather.
Sec.-Tr.—L. R. Dutton, Jenkintown, Pa.
Conv., 1920, April 14-15—Philadelphia, Pa.

South Central Gas Association

(formerly Texas Gas Association)
Pres.—P. E. Nicholls, Galveston, Texas.
V.-Pres.—C. B. McKinney, Dallas, Texas.
F. L. Weisser, San Antonio, Texas.
Sec.-Tr.—C. H. Seidenglanz, 1501 Commerce
St., Dallas, Texas.
Conv., 1920.

Southern Gas Association

Pres.—Noble Clay, Durham, N. C.
V.-Pres.—E. S. Dickey,
J. H. Haggerty.
Sec.-Tr.—M. A. Bowlin, Macon, Ga.
Conv., 1920, Norfolk, Va.

Wisconsin Gas Association

Pres.—Bruno Rahn, Milwaukee, Wis.
Sec.-Tr.—Henry Harman, 182 Wisconsin St.,
Milwaukee, Wis.
Conv., 1920, March 23-24, Milwaukee, Wis.

OTHER ASSOCIATIONS

Natural Gas Association of America

Pres.—Bert. C. Oliphant, Buffalo, N. Y.
V.-Pres.—Harry J. Hoover,
Ogden K. Shannon,
H. A. Quay.
Sec.-Tr.—Wm. B. Way, 904-5 Oliver Bldg.,
Pittsburgh, Pa.
Conv., 1920, Atlantic City, N. J.

Society of Gas Lighting

Pres.—Alex. H. Strecker, Newark, N. J.
V.-Pres.—W. Cullen Morris.
Sec.—Geo. G. Ramsdell, 130 E. 15th St., New
York, N. Y.
Treas.—Wm. J. Welsh
Conv., 1920.

Southwestern Electrical and Gas Association

Pres.—Burr Martin, Dallas, Texas.
V.-Pres.—A. Hardgrave,
C. E. Corder,
A. H. Warren.
Sec.—H. S. Cooper, Slaughter Bldg.,
Dallas, Texas.
Treas.—J. B. Walker.
Conv., 1920.

Classified Directory--Manufacturers of Gas Equipment

Company Members Only, American Gas Association, Inc.

ARC LAMPS (Gas)

General Gas Light Co., New York, N. Y.,
and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids,
Iowa
Welsbach Co., Gloucester, N. J.

BENCHES

J. H. Gautier & Co., Jersey City, N. J.
Russell Engineering Co., St. Louis, Mo.
The Gas Machinery Co., Inc., Cleveland,
Ohio
The U. G. I. Contracting Co., Broad &
Arch Sts., Philadelphia, Pa.

BENCH IRON WORK

Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham,
Mass.
Isbell-Porter Co., Newark, N. J.
Russell Engineering Co., St. Louis, Mo.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall
St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co.,
St. Louis, Mo.
The Stacey Mfg. Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort
Wayne, Ind.

BOILERS (Gas)

Wm. M. Crane Co., 16 W. 32d St., New
York, N. Y.
General Gas Appliance Co., 103 Park Ave.,
New York, N. Y.
Wm. Kane Mfg. Co., Inc., 1915 Adams
St., Philadelphia, Pa.
Kidde & Co., 169 Chambers St., New
York, N. Y.
National Machine Works, Chicago, Ill.
The Bryant Heater & Mfg. Co., Cleve-
land, Ohio
The Improved Appliance Co., 419 Kent
Ave., Brooklyn, N. Y.
The Ofeldt Gas Fired Boiler Co., Inc.,
Nyack, N. Y.

BOILERS (Gas for House Heating)

Dodd Heating Systems Limited, Toronto,
Ont.
Kidde & Co., 169 Chambers St., New
York, N. Y.
The Bryant Heater & Mfg. Co., Cleve-
land, Ohio

BOILERS (Waste Heat)

The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad &
Arch Sts., Philadelphia, Pa.

BLOWERS, BOOSTERS, EXHAUSTERS

Connelly Iron Sponge & Governor Co.,
227 Fulton St., New York, N. Y.
Isbell-Porter Co., Newark, N. J.
Maxon-Premix Burner Co., Muncie, Ind.
The Gas Machinery Co., Cleveland, Ohio

The Improved Appliance Co., 419 Kent
Ave., Brooklyn, N. Y.

The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard
Ave., Bronx, N. Y.

The U. G. I. Contracting Co., Broad &
Arch Sts., Philadelphia, Pa.

The Western Gas Construction Co., Fort
Wayne, Ind.

Wilbraham-Green Blower Co., Pottstown,
Pa.

L. J. Wing Mfg. Co., 362 West 13th St.,
New York, N. Y.

BRAZING TABLES

Rathbone, Sard & Co., Albany, N. Y.
The Improved Appliance Co., 419 Kent
Ave., Brooklyn, N. Y.

BROILERS (Hotel)

Geo. M. Clark & Co., Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New
York, N. Y.
Rathbone, Sard & Co., Albany, N. Y.
The Michigan Stove Co., Detroit, Mich.

BURNERS (Industrial)

Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New
York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
General Fire Extinguisher Co., Provid-
ence, R. I.
General Gas Appliance Co., 103 Park Ave.,
New York, N. Y.
Charles A. Hones, Inc., 91 Noble St.,
Brooklyn, N. Y.
International Hale Gas Mixer Co., Provid-
ence, R. I.
Johnson Gas Appliance Co., Cedar Rapids,
Iowa
Maxon-Premix Burner Co., Muncie, Ind.
National Machine Works, Chicago, Ill.
Tate-Jones & Co., Inc., 50 Church St.,
New York, N. Y.
The Baltimore Gas Appliance & Mfg. Co.,
Baltimore, Md.
The Eclipse Stove Co., Mansfield, Ohio
The Improved Appliance Co., 419 Kent
Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard
Ave., Bronx, N. Y.
The A. H. Wolff Gas Radiator Co., 4
Great Jones St., New York, N. Y.

BURNERS (Lighting)

American Meter Co., Inc., 105 W. 40th
St., New York, N. Y.
Wm. M. Crane Co., 16 W. 32d St., New
York, N. Y.
General Gas Light Co., New York, N. Y.,
and Kalamazoo, Mich.
Johnson Gas Appliance Co., Cedar Rapids,
Iowa

Welsbach Co., Gloucester, N. J.

BY-PRODUCT OVENS

By-Product Coke Corp., Chicago, Ill.
Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Semet-Solvay Co., Syracuse, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Koppers Co., Pittsburgh, Pa.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

BY-PRODUCT RECOVERY APPARATUS

Foundation Oven Corporation, Woolworth Building, New York, N. Y.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Koppers Co., Pittsburgh, Pa.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

CALORIMETERS

American Meter Co., Inc., 105 W. 40th St., New York, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, 455 Commercial St., Boston, Mass.
Superior Meter Co., Brooklyn, N. Y.

CASING, TUBING (Steel)

National Tube Co., Frick Bldg., Pittsburgh, Pa.

CHARGING COAL

Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

COAL AND COKE (Conveyors, Crushers, Screeners)

R. H. Beaumont Co., 315 Arch St., Philadelphia, Pa.
Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

COAL TAR PRODUCTS & CHEMICALS

The Barrett Company, 17 Battery Place, New York, N. Y.

COCKS (Ranges, Water Heaters, Service and Meter)

A-B Stove Co., Battle Creek, Mich.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Hays Mfg. Co., Inc., Erie, Pa.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Kitson Co., 2837 Oakford St., Philadelphia, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.

Standard Brass Works, Detroit, Mich.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.

COMPRESSORS

Plant Engineering & Equipment Co., 192 Broadway, New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

CONDENSERS

Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Stacey Mfg. Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

COOKING AUXILIARIES

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Reliable Stove Co. Div., Cleveland, O.
The G. S. Blodgett Co., Burlington, Vt.
The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Scott Gas Appliance Co., 1311 E. St., N. W., Washington, D. C.

COUPLINGS

S. R. Dresser Mfg. Co., Bradford, Pa.

CYLINDERS (Pressure)

National Tube Co., Frick Bldg., Pittsburgh, Pa.

DECALCOMANIA PRODUCTS

The Meyercord Co. Inc., Chamber of Commerce Bldg., Chicago, Ill.

DYES, DISINFECTANTS, DRY COLORS

The Sherwin-Williams Co., Cleveland, Ohio, New York, N. Y.

ELECTRIC CONTROLLING DEVICES

The Cutler-Hammer Mfg. Co., Milwaukee, Wis.

EXCHANGERS (Heat)

The Bartlett Hayward Co., Baltimore, Md.
The Western Gas Construction Co., Fort Wayne, Ind.

EXPERT APPRAISAL

Steele Engineering Co., Detroit, Mich.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.

EXTRACTORS (Tar, Dust, Fumes)

Isbell-Porter Co., Newark, N. J.
The Bartlett Hayward Co., Baltimore, Md.
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

FITTINGS

A-B Stove Co., Battle Creek, Mich.
Will W. Barnes, 31 Chelsea Place, East Orange, N. J.
Claus Automatic Gas Cock Co., Milwaukee, Wis.
Davis & Farnum Mfg. Co., Waltham, Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.
General Fire Extinguisher Co., Providence, R. I.
Kitson Co., 2827 Oakford St., Philadelphia, Pa.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Shapiro & Aronson, Inc., 20 Warren St., New York, N. Y.
Standard Brass Works, Detroit, Mich.
The Gas Machinery Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
The Roberts Brass Mfg. Co., Detroit, Mich.
The Western Gas Construction Co., Fort Wayne, Ind.
Welsbach Co., Gloucester, N. J.

FITTINGS (Malleable Iron)

Stanley G. Flagg & Co., 1421 Chestnut St., Philadelphia, Pa.

FLEXIBLE TUBING

Atlantic Tubing Co., Providence, R. I.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Titeflex Metal Hose Corp., Badger Ave., Newark, N. J.

FLASHLIGHTS AND BATTERIES

Will W. Barnes, 31 Chelsea Place, East Orange, N. J.

FUEL BRIQUETTING

Foundation Oven Corporation, Woolworth Building, New York, N. Y.
General Briquetting Co., 25 Broad St., New York, N. Y.

FURNACES

Century Stove & Mfg. Co., Johnstown, Pa.
Eriez Stove & Mfg. Co., Erie, Pa.

Geist Mfg. Co., Atlantic City, N. J.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.

Johnson Gas Appliance Co., Cedar Rapids, Iowa

Maxon-Premix Burner Co., Muncie, Ind.
National Machine Works, Chicago, Ill.
Russell Engineering Co., St. Louis, Mo.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.

The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

GAS ENGINES

The Bartlett Hayward Co., Baltimore, Md.
United Lead Co., 111 Broadway, New York, N. Y.

GAS ENGINE COCKS AND VALVES

Standard Brass Works, Detroit, Mich.

GAS IRONS

A-B Stove Co., Battle Creek, Mich.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Milwaukee Gas Specialty Co., Milwaukee, Wis.
Perfect Combustion Co., Chicago, Ill.
Strause Gas Iron Co., Philadelphia, Pa.

GAS LOGS

Backus Heater & Foundry Co., Inc., Boston, Mass.
The Mead Gas Heater Co., Delawanna, N. J.
Strait & Richards, Inc., Newark, N. J.

GAS MIXERS

Century Stove & Mfg. Co., Johnstown, Pa.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eriez Stove & Mfg. Co., Erie, Pa.
Geist Mfg. Co., Atlantic City, N. J.
General Fire Extinguisher Co., Providence, R. I.
Hays Mfg. Co., Inc., Erie, Pa.
Improved Appliance Co., Inc., 419 Kent Ave., Brooklyn, N. Y.
International Hale Gas Mixer Co., Providence, R. I.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Maxon-Premix Burner Co., Muncie, Ind.
Strait & Richards, Inc., Newark, N. J.
Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

GAS PLANTS (Blue)

The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.

The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Carbureted Water)

Gas Machinery Co., Cleveland, Ohio
National Machine Works, Chicago, Ill.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Mfg. Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS PLANTS (Coal) (Engineers)

Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham, Mass.
Isbell-Porter Co., Newark, N. J.
Russell Engineering Co., St. Louis, Mo.
Semet-Solvay Co., Syracuse, N. Y.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Gas Machinery Co., Cleveland, Ohio
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.
The Stacey Mfg. Co., Cincinnati, Ohio
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

GAS RANGE WATER HEATERS

Elliott Water Heater Co., Inc., 1246 Myrtle Ave., Brooklyn, N. Y.

HEATERS (Room)

Backus Heater & Foundry Co., Inc., Boston, Mass.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.
Eriez Stove & Mfg. Co., Erie, Pa.
Estate Stove Co., Hamilton, Ohio
Geist Mfg. Co., Atlantic City, N. J.
General Fire Extinguisher Co., Providence, R. I.
General Gas Light Co., New York, N. Y., and Kalamazoo, Mich.
Illinois Specialty Mfg. Co., Bloomington, Ill.
Kidde & Co., 169 Chambers St., New York, N. Y.
Lawson Mfg. Co., Pittsburgh, Pa.
New Process Stove Co. Div., Cleveland, Ohio.
Reliable Stove Co. Div., Cleveland, Ohio.
Reznor Mfg. Co., Mercer, Pa.
Roberts & Mander Stove Co., Philadelphia, Pa.
J. B. Slattery & Bro. Inc., 108-110 Lawrence St., Brooklyn, N. Y.

Strait & Richards, Inc., Newark, N. J.
The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
The Champion Stove Co., Cleveland, Ohio
The Mead Gas Heater Co., Delawanna, N. J.
The Ohio State Stove & Mfg. Co., Columbus, Ohio.
The Sanitary Heating Co., 233 37th St., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
Welsbach Company, Gloucester, N. J.

HEATERS (Garage)

Kidde & Co., 169 Chambers St., New York, N. Y.

HEATERS (Pressing and Soldering Irons)

Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Estate Stove Co., Hamilton, Ohio
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
Charles A. Hones, Inc., 91 Noble St., Brooklyn, N. Y.
Johnson Gas Appliance Co., Cedar Rapids, Iowa
Reliable Stove Co. Div., Cleveland, O.
Strait & Richards, Inc., Newark, N. J.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

HIGH PRESSURE SYSTEMS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
General Fire Extinguisher Co., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
Selas Co., 521 W. 23d St., New York, N. Y.
The Gas Machinery Co., Cleveland, Ohio
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard Ave., Bronx, N. Y.

HOLDERS (Structural Steel Works)

Camden Iron Works, Camden, N. J.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Mfg. Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

HOT PLATES

A-B Stove Co., Battle Creek, Mich.
Century Stove & Mfg. Co., Johnstown, Pa.
Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Detroit Stove Works, Detroit, Mich.
Eclipse Gas Stove Co., Rockford, Ill.

Eriez Stove & Mfg. Co., Erie, Pa.
 General Gas Appliance Co., 103 Park Ave.,
 New York, N. Y.
 Rathbone, Sard & Co., Albany, N. Y.
 Reliable Stove Co. Div., Cleveland, O.
 J. B. Slattery & Bro., Inc., 108-110 Law-
 rence St., Brooklyn, N. Y.

The Baltimore Gas Appliance & Mfg. Co.,
 Baltimore, Md.
 The Champion Stove Co., Cleveland, Ohio
 The Eclipse Stove Co., Mansfield, Ohio
 The Improved Appliance Co., 419 Kent
 Ave., Brooklyn, N. Y.
 The Michigan Stove Co., Detroit, Mich.
 The A. H. Wolff Gas Radiator Co., 4
 Great Jones St., New York, N. Y.
 The Ohio State Stove & Mfg. Co.,
 Columbus, Ohio.

Union Stove Works, 20 Beekman St.,
 New York, N. Y.
 Weir Stove Co., Taunton, Mass.

INCINERATORS

Estate Stove Co., Hamilton, Ohio
 Ruud Mfg. Co., Pittsburgh, Pa.

INSTRUMENTS (Measuring, Testing and Recording)

American Meter Co., 105 W. 40th St.,
 New York, N. Y.
 Bacharach Industrial Instrument Co.,
 Pittsburgh, Pa.
 Bailey Meter Co., Cleveland, Ohio.
 Connelly Iron Sponge & Governor Co.,
 227 Fulton St., New York, N. Y.
 Equitable Meter Co., Pittsburgh, Pa.
 D. McDonald & Co., Albany, N. Y.
 Maryland Meter Works, Baltimore, Md.
 Precision Instrument Co., 63 Fort St. W.,
 Detroit, Mich.
 Republic Flow Meters Co., 565 Washing-
 ton Blvd., Chicago, Ill.
 Steere Engineering Co., Detroit, Mich.
 The Schaeffer & Budenberg Mfg. Co.,
 Brooklyn, N. Y.
 The U. G. I. Contracting Co., Broad &
 Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort
 Wayne, Ind.

INSULATING MATERIALS

Celite Products Co., 11 Broadway, New
 York, N. Y.
 Davis & Farnum Mfg. Co., Waltham,
 Mass.

KILNS (For Firing Glass, China and Pottery)

B. F. Drakenfeld & Co., Inc., 50 Murray
 St., New York, N. Y.
 General Gas Appliance Co., 103 Park Ave.,
 New York, N. Y.
 Russell Engineering Co., St. Louis, Mo.
 The Improved Appliance Co., 419 Kent
 Ave., Brooklyn, N. Y.
 The Parker-Russell Mining & Mfg. Co.,
 St. Louis, Mo.
 The Surface Combustion Co., 366 Gerard
 Ave., Bronx, N. Y.

LIGHTERS (Ranges)

Claus Automatic Gas Cock Co., Milwau-
 kee, Wis.

Milwaukee Gas Specialty Co., Milwaukee,
 Wis.

Reliable Stove Co. Div., Cleveland, O.
 Safety Gas Lighter Co., Haverhill, Mass.
 Strause Gas Iron Co., Philadelphia, Pa.
 The Michigan Stove Co., Detroit, Mich.
 Welsbach Co., Gloucester, N. J.

LIGHTING (Fixtures)

Will W. Barnes, 31 Chelsea Place, East
 Orange, N. J.
 Shapiro & Aronson, Inc., 20 Warren St.,
 New York, N. Y.
 Welsbach Co., Gloucester, N. J.

LIGHTING (Gas Domes, Portables, etc.)

Will W. Barnes, 31 Chelsea Place, East
 Orange, N. J.
 Kramer Bros. Lamp Co., 585 Broadway,
 New York, N. Y.
 Shapiro & Aronson, Inc., 20 Warren St.,
 New York, N. Y.
 Welsbach Co., Gloucester, N. J.

LIGHTING (Glassware)

Shapiro & Aronson, Inc., 20 Warren St.,
 New York, N. Y.
 Welsbach Co., Gloucester, N. J.

LIGHTING (Incidentals)

Storrs Mica Co., Owego, N. Y.

LIGHTING (Mantles)

General Gas Light Co., New York, N. Y.,
 and Kalamazoo, Mich.
 Welsbach Co., Gloucester, N. J.

METAL RECEPTACLES

Wm. M. Crane Co., 16 W. 32d St., New
 York, N. Y.
 Charles A. Hones, Inc., 91 Noble St.,
 Brooklyn, N. Y.
 National Machine Works, Chicago, Ill.
 The Improved Appliance Co., 419 Kent
 Ave., Brooklyn, N. Y.
 The Surface Combustion Co., 366 Gerard
 Ave., Bronx, N. Y.
 United Lead Co., 111 Broadway, New
 York, N. Y.

METERS

American Meter Co., 105 W. 40th St.,
 New York, N. Y.
 Bacharach Industrial Instrument Co.,
 Pittsburgh, Pa.
 Bailey Meter Co., Cleveland, Ohio.
 Cleveland Gas Meter Co., Cleveland, Ohio
 Equitable Meter Co., Pittsburgh, Pa.
 John J. Griffin & Co., 1521 Race St., Phila-
 delphia, Pa.
 Helme & McIlhenny, 1349 Cherry St.,
 Philadelphia, Pa.
 D. McDonald & Co., Albany, N. Y.
 Maryland Meter Works, Baltimore, Md.
 Metric Metal Works, Erie, Pa.
 Precision Instrument Co., 63 Fort St. W.,
 Detroit, Mich.
 Rotary Meter Co., 52 Vanderbilt Ave.,
 New York, N. Y.

Superior Meter Co., Bush Terminal,
Brooklyn, N. Y.
The Cleveland Rotary Meter Co., Cleve-
land, Ohio
The Cutler-Hammer Mfg. Co., Milwau-
kee, Wis.
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Com-
mercial St., Boston, Mass.

METERS (Air and Steam)

Republic Flow Meters Co., 565 Washing-
ton Blvd., Chicago, Ill.
The U. G. I. Contracting Co., Broad &
Arch Sts., Philadelphia, Pa.

METER CONNECTIONS, SEALS, Etc.

American Meter Co., 105 W. 40th St.,
New York, N. Y.
Cleveland Gas Meter Co., Cleveland, Ohio
S. R. Dresser Mfg. Co., Bradford, Pa.
Equitable Meter Co., Pittsburgh, Pa.
Helme & McIlhenny, 1349 Cherry St.,
Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
H. Mueller Mfg. Co., New York, N. Y.,
and Decatur, Ill.
Superior Meter Co., Bush Terminal,
Brooklyn, N. Y.
The Lattimer Stevens Co., Columbus, Ohio
The Sprague Meter Co., Bridgeport, Conn.
Nathaniel Tufts Meter Works, 455 Com-
mercial St., Boston, Mass.

METER PROVERS

American Meter Co., 105 W. 40th St.,
New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
John J. Griffin & Co., Philadelphia, Pa.
Helme & McIlhenny, 1349 Cherry St.,
Philadelphia, Pa.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Superior Meter Co., Bush Terminal,
Brooklyn, N. Y.
Nathaniel Tufts Meter Works, 455 Com-
mercial St., Boston, Mass.

METER SHELF

Wm. M. Crane Co., 16 W. 32d St., New
York, N. Y.

OFFICE LABOR SAVING DEVICES

Addressograph Co., Chicago, Ill.
Burroughs Adding Machine Co., Detroit,
Mich.
Elliott-Fisher Co., Harrisburg, Pa.
Kalamazoo Loose-Leaf Binder Co., Kala-
mazoo, Mich.
Library Bureau, Boston, Mass.
Monroe Calculating Machine Co., Wool-
worth Bldg., New York, N. Y.
The Rand Co., North Tonawanda, N. Y.
Underwood Typewriter Co., Vesey St.,
New York, N. Y.

OIL (Diaphragm)

John J. Griffin & Co., 1521 Race St., Phila-
delphia, Pa.
Superior Meter Co., Brooklyn, N. Y.

Ovens (Baking and Cooking)

Geo. M. Clark & Co. Div., Chicago, Ill.
Wm. M. Crane Co., 16 W. 32d St., New
York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
Famous Oven Manufacturing Co., 110 W.
42nd St., New York, N. Y.
General Fire Extinguisher Co., Provid-
ence, R. I.
General Gas Appliance Co., 103 Park Ave.,
New York, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New
York, N. Y.
The G. S. Blodgett Co., Burlington, Vt.
The Crandall-Pettee Co., Hudson St., New
York, N. Y.
The Improved Appliance Co., 419 Kent
Ave., Brooklyn, N. Y.
The Ohio State Stove & Mfg. Co., Colum-
bus, Ohio
The Union Steel Products Co., Ltd., Al-
bion, Mich.
The Surface Combustion Co., 366 Gerard
Ave., Bronx, N. Y.

**Ovens (Annealing, Japanning, Drying,
Core, etc.)**

Famous Oven Manufacturing Co., 110 W.
42nd St., New York, N. Y.
Gehrnich Indirect Heat Oven Co., Inc.,
62 Franklin Ave., Brooklyn, N. Y.
General Fire Extinguisher Co., Provid-
ence, R. I.
General Gas Appliance Co., 103 Park Ave.,
New York, N. Y.
Johnson Gas Appliance Co., Cedar Rapids,
Iowa
Meek Oven Mfg. Co., 18 W. 34th St., New
York, N. Y.
National Machine Works, Chicago, Ill.
The Improved Appliance Co., 419 Kent
Ave., Brooklyn, N. Y.
The C. M. Kemp Mfg. Co., Baltimore, Md.
The Surface Combustion Co., 366 Gerard
Ave., New York, N. Y.
The Union Steel Products Co., Ltd., Al-
bion, Mich.
Young Bros. Co., Detroit, Mich.

Ovens (Warming)

Wm. M. Crane Co., 16 W. 32d St., New
York, N. Y.
Eclipse Gas Stove Co., Rockford, Ill.
General Gas Appliance Co., 103 Park Ave.,
New York, N. Y.
Meek Oven Mfg. Co., 18 W. 34th St., New
York, N. Y.
The G. S. Blodgett Co., Burlington, Vt.
The Improved Appliance Co., 419 Kent
Ave., Brooklyn, N. Y.
The Union Steel Products Co., Ltd., Al-
bion, Mich.

PAINTS AND VARNISHES

The Sherwin-Williams Co., Cleveland,
Ohio, New York, N. Y.

PHOTOMETERS

American Meter Co., 105 W. 40th St.,
New York, N. Y.

Connelly Iron Sponge & Governor Co.,
227 Fulton St., New York, N. Y.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
Nathaniel Tufts Meter Works, Boston,
Mass.

PIPE

Camden Iron Works, Camden, N. J.
Davis & Farnum Mfg. Co., Waltham,
Mass.
General Fire Extinguisher Co., Providence, R. I.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE CASTINGS AND SPECIALS

Davis & Farnum Mfg. Co., Waltham,
Mass.
Isbell-Porter Co., Newark, N. J.
National Machine Works, Chicago, Ill.
The Bartlett Hayward Co., Baltimore, Md.
The Stacey Mfg. Co., Cincinnati, Ohio
The Western Gas Construction Co., Fort Wayne, Ind.

PIPE CLAMPS AND SLEEVES

Davis & Farnum Mfg. Co., Waltham,
Mass.
S. R. Dresser Mfg. Co., Bradford, Pa.
National Machine Works, Chicago, Ill.

PIPE PACKING

Celite Products Co., 11 Broadway, New York, N. Y.
General Fire Extinguisher Co., Providence, R. I.
Passaic Metal Packing Co., Passaic, N. J.
United Lead Co., 111 Broadway, New York, N. Y.

PIPE TOOLS (Caulking, Cutting, Tapping)

General Fire Extinguisher Co., Providence, R. I.
H. Mueller Mfg. Co., New York, N. Y.,
and Decatur, Ill.
United Lead Co., 111 Broadway, New York, N. Y.

PLATE WARMERS

Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
Duparquet, Huot & Moneuse Co., 108 W. 22nd St., New York, N. Y.
General Gas Appliance Co., 103 Park Ave., New York, N. Y.
The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

PORCELAIN ENAMEL PARTS

(Stoves, Lamps, Linings, Stamping and Spinings)
Baltimore Enamel & Novelty Co., Baltimore, Md.
Eclipse Gas Stove Co., Rockford, Ill.
The Enamel Products Co., Cleveland, Ohio
The Porcelain Enamel & Mfg. Co., Baltimore, Md.

The Union Steel Products Co., Ltd., Albion, Mich.

PRESSURE GAUGES

American Meter Co., 105 W. 40th St., New York, N. Y.
Bacharach Industrial Instrument Co.s, Pittsburgh, Pa.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Equitable Meter Co., Pittsburgh, Pa.
General Fire Extinguisher Co., Providence, R. I.
D. McDonald & Co., Albany, N. Y.
Maryland Meter Works, Baltimore, Md.
National Machine Works, Chicago, Ill.
Superior Meter Co., Bush Terminal, Brooklyn, N. Y.
The Bryant Heater & Mfg. Co., Cleveland, Ohio
The Cleveland Rotary Meter Co., Cleveland, Ohio
The Gas Machinery Co., Cleveland, Ohio
The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
Nathaniel Tufts Meter Works, Boston, Mass.

PUMPS

American Meter Co., 105 W. 40th St., New York, N. Y.
Gas Machinery Co., Cleveland, Ohio
Nathaniel Tufts Meter Works, Boston, Mass.
Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
Superior Meter Co., Brooklyn, N. Y.
The Western Gas Construction Co., Fort Wayne, Ind.
L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

PURIFIERS

Camden Iron Works, Camden, N. J.
Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Cruse-Kemper Co., Ambler, Pa.
Davis & Farnum Mfg. Co., Waltham, Mass.
Gas Machinery Co., Cleveland, Ohio
Isbell-Porter Co., Newark, N. J.
Steere Engineering Co., Detroit, Mich.
The Bartlett Hayward Co., Baltimore, Md.
The Improved Equipment Co., 60 Wall St., New York, N. Y.
The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
The Stacey Mfg. Co., Cincinnati, Ohio
The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
The Western Gas Construction Co., Fort Wayne, Ind.

PURIFYING MATERIALS

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
Gas Purifying Materials Co., Foot of Halsey St., Long Island City, N. Y.
J. F. Henderson Co., 1707 Commonwealth Bldg., Pittsburgh, Pa.

RADIATORS

- James B. Clow & Sons, Chicago, Ill.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Eriez Stove & Mfg. Co., Erie, Pa.
 General Fire Extinguisher Co., Providence, R. I.
 Kidde & Co., 169 Chambers St., New York, N. Y.
 J. B. Slattery & Bro. Inc., 108-110 Lawrence St., Brooklyn, N. Y.
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Mead Gas Heater Co., Delawanna, N. J.
 The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.

RANGES (Domestic)

- A-B Stove Co., Battle Creek, Mich.
 Century Stove & Mfg. Co., Johnstown, Pa.
 Geo. M. Clark & Co. Div., Chicago, Ill.
 Chambers Manufacturing Co., Shelbyville, Ind.—(Fireless type)
 Bartlett & Co., Inc., Philadelphia, Pa.
 Comstock-Castle Stove Co., Quincy, Ill.
 Abram Cox Stove Co., Philadelphia, Pa.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Detroit Stove Works, Detroit, Mich.
 Dangler Stove Co. Div., Cleveland, Ohio.
 Eclipse Gas Stove Co., Rockford, Ill.
 Eriez Stove & Mfg. Co., Erie, Pa.
 Estate Stove Co., Hamilton, Ohio
 National Stove Co. Div., Lorain, Ohio.
 New Process Stove Co. Div., Cleveland, Ohio.
 Quick Meal Stove Co. Div., St. Louis, Mo.
 Rathbone, Sard & Co., Albany, N. Y.
 Reliable Stove Co. Div., Cleveland, O.
 Roberts & Mander Stove Co., Philadelphia, Pa.
 The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
 The Champion Stove Co., Cleveland, Ohio
 The Eclipse Stove Co., Mansfield, Ohio
 The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
 The Michigan Stove Co., Detroit, Mich.
 The Ohio State Stove & Mfg. Co., Columbus, Ohio
 The Peninsular Stove Co., Detroit, Mich.
 The A. H. Wolff Gas Radiator Co., 4 Great Jones St., New York, N. Y.
 Union Stove Works, 70 Beekman St., New York, N. Y.
 Vesta Gas Range & Mfg. Co., Chattanooga, Tenn.
 Walker & Pratt Mfg. Co., Boston, Mass.
 Weir Stove Co., Taunton, Mass.

RANGES (Hotel)

- Geo. M. Clark & Co. Div., Chicago, Ill.
 Comstock-Castle Stove Co., Quincy, Ill.
 Abram Cox Stove Co., Philadelphia, Pa.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Detroit Stove Works, Detroit, Mich.
 Duparquet, Huot & Monceuse Co., 108 W. 22nd St., New York, N. Y.

- Eclipse Gas Stove Co., Rockford, Ill.
 Estate Stove Co., Hamilton, Ohio
 Reliable Stove Co. Div., Cleveland, O.
 Roberts & Mander Stove Co., Philadelphia, Pa.
 The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md.
 The General Gas Appliance Co., 103 Park Ave., New York, N. Y.
 The Michigan Stove Co., Detroit, Mich.

REFRACTORY MATERIALS

- J. H. Gautier & Co., Jersey City, N. J.
 Harbison-Walker Refractories Co., Pittsburgh, Pa.
 Quigley Furnace Specialties Co., 26 Cortlandt St., New York, N. Y.
 Russell Engineering Co., St. Louis, Mo.
 Tate-Jones & Co., Inc., 50 Church St., New York, N. Y.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

REGULATORS (Governors)

- American Meter Co., 105 W. 40th St., New York, N. Y.
 Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
 Equitable Meter Co., Pittsburgh, Pa.
 Gas Machinery Co., Cleveland, Ohio
 Isbell-Porter Co., Newark, N. J.
 H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.
 National Machine Works, Chicago, Ill.
 Reynolds Gas Regulator Co., Anderson, Ind.
 Steere Engineering Co., Detroit, Mich.
 Superior Meter Co., Brooklyn, N. Y.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Cleveland Rotary Meter Co., Cleveland, Ohio
 The Sprague Meter Co., Bridgeport, Conn.
 The Western Gas Construction Co., Fort Wayne, Ind.
 L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

REPAIRS (Gas Meters and Appliances)

- Helme & McLhenny, 1349 Cherry St., Philadelphia, Pa.
 Maryland Meter Works, Baltimore, Md.
 Superior Meter Co., Brooklyn, N. Y.
 The Western Gas Construction Co., Fort Wayne, Ind.

RETORTS

- Gas Machinery Co., Cleveland, Ohio
 J. H. Gautier & Co., Jersey City, N. J.
 Harbison-Walker Refractories Co., Pittsburgh, Pa.
 Russell Engineering Co., St. Louis, Mo.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Parker-Russell Mining & Mfg. Co., St. Louis, Mo.

RUST PREVENTATIVE

- Superior Laboratories, Grand Rapids, Mich.

SCRUBBERS

Camden Iron Works, Camden, N. J.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Foundation Oven Corporation, Woolworth Building, New York, N. Y.
 Gas Machinery Co., Cleveland, Ohio
 Isbell-Porter Co., Newark, N. J.
 Steere Engineering Co., Detroit, Mich.
 The Bartlett Hayward Co., Baltimore, Md.
 The Improved Equipment Co., 60 Wall St., New York, N. Y.
 The Koppers Co., Pittsburgh, Pa.
 The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
 The Stacey Mfg. Co., Cincinnati, Ohio
 The U. G. I. Contracting Co., Broad & Arch Sts., Philadelphia, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

SERVICE BOXES, CLAMPS, Etc.

Camden Iron Works, Camden, N. J.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 General Fire Extinguisher Co., Providence, R. I.
 Hays Mfg. Co., Inc., Erie, Pa.
 H. Mueller Mfg. Co., New York, N. Y., and Decatur, Ill.

STEAM TRAPS

Plant Engineering & Equipment Co., Inc., (Corliss Valve) 192 Broadway, New York, N. Y.

STILLS (Benzol, Toluol)

Foundation Oven Corporation, Woolworth Building, New York, N. Y.
 The Bartlett Hayward Co., Baltimore, Md.
 The Koppers Co., Pittsburgh, Pa.
 The Western Gas Construction Co., Fort Wayne, Ind.

STOVES (Confectioners, Laundry, Tailor)

A-B Stove Co., Battle Creek, Mich.
 Geo. M. Clark & Co. Div., Chicago, Ill.
 Wm. M. Crane Co., 16 W. 32d St., New York, N. Y.
 Reliable Stove Co. Div., Cleveland, O.
 The General Gas Appliance Co., 103 Park Ave., Brooklyn, N. Y.
 The Improved Appliance Co., 419 Kent Ave., New York, N. Y.

STRAINERS

Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.

STRUCTURAL STEEL WORKS (See Holders)**TANKS (Ammonia, Oil, Water)**

Camden Iron Works, Camden, N. J.
 Cruse-Kemper Co., Ambler, Pa.
 Davis & Farnum Mfg. Co., Waltham, Mass.
 Gas Machinery Co., Cleveland, Ohio
 National Tube Co., Frick Bldg., Pittsburgh, Pa.
 Steere Engineering Co., Detroit, Mich.

The Bartlett Hayward Co., Baltimore, Md.
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Stacey Bros. Gas Construction Co., Cincinnati, Ohio
 The Stacey Mfg. Co., Cincinnati, Ohio
 The Western Gas Construction Co., Fort Wayne, Ind.

THERMOMETERS

American Meter Co., 105 W. 40th St. New York, N. Y.
 Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
 Gas Machinery Co., Cleveland, Ohio
 General Fire Extinguisher Co., Providence, R. I.
 Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.
 The Schaeffer & Budenberg Mfg. Co., Brooklyn, N. Y.
 The Western Gas Construction Co., Fort Wayne, Ind.

THERMOSTATS

Gas Machinery Co., Cleveland, Ohio
 Kidde & Co., 169 Chambers St., New York, N. Y.
 Minneapolis Heat Regulator Co., Minneapolis, Minn.
 B. Ryan & Co., 60 E. 10th St., New York, N. Y.
 The Bryant Heater & Mfg. Co., Cleveland, Ohio

THERMO VALVES

Pittsburgh Water Heater Co., Pittsburgh, Pa.

THORIUM

Welsbach Co., Gloucester, N. J.

TRENCH WORK

Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.

TURBINE (Steam)

L. J. Wing Mfg. Co., 362 West 13th St., New York, N. Y.

VALVES

Claus Automatic Gas Cock Co., Milwaukee, Wis.
 Connelly Iron Sponge & Governor Co., 227 Fulton St., New York, N. Y.
 Gas Machinery Co., Cleveland, Ohio
 General Fire Extinguisher Co., Providence, R. I.
 Isbell-Porter Co., Newark, N. J.
 Plant Engineering & Equipment Co., Inc., 192 Broadway, New York, N. Y.
 Steere Engineering Co., Detroit, Mich.
 The Bartlett Hayward Co., Baltimore, Md.
 The Bryant Heater & Mfg. Co., Cleveland, Ohio
 The Improved Appliance Co., 419 Kent Ave., Brooklyn, N. Y.

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Gas Record (20 W. Jackson Blvd., Chicago, Ill.).
Int. G. Jour. of Canada—Intercolonial Gas Journal of Canada (90 Caroline St., N. Hamilton, Canada).
Acet. Jour.—Acetylene Journal (Acetylene Journal Publishing Co., Peoples Gas Bldg., Chicago, Ill.).
Natural Gas and Gasoline Journal—The Periodicals Publishing Co., Inc. (Buffalo, N. Y.).

Gas Trade Journals—English.

- Gas Jour.—Gas Journal (Walter King, Publisher, 11 Bolt Court, Fleet St., London, E. C.).
The Gas World (John Allen & Co., 8 Bouverie St., London, E. C. 4).

Association Bulletins.

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Bulletin Empire State Gas & Electric Association (29 W. 39th St., New York, N. Y.).
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Trans. I. E. S.—Illuminating Engineering Society (29 W. 39th St., New York, N. Y.).
Jour. R. Soc. of Arts—Journal of the Royal Society of Arts (John St., Adelphi, London, W. C. 2).
A Thousand and One Uses for Gas (British Commercial Gas Association, 47 Victoria St., Westminster, London, S. W., England).

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- Aera (American Electric Railway Association, 8 W. 40th St., New York, N. Y.).
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Distribution Problems Solved (Alton, Ill.)	C. E. Reese	Gas Age, Dec. 15, 523
Electrolysis, Gas Main Fusion	J. W. Bacon	Gas Jour., Dec. 16, 599
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Canada Orders 450 B. t. u. Gas		A. G. A. Monthly, Jan., 9
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 The Lovekin Water Heater Co., 39 Laurel St., Philadelphia, Pa.
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